

TRADITIONAL LEARNING, COOPERATIVE LEARNING, AND RECORDER

By

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Abstract

The purpose of this study was to determine whether cooperative learning strategies or traditional direct instruction would more positively affect the performance achievement of fourth- and fifth-grade recorder students. It was hypothesized that students participating in cooperative learning activities might perform differently in the areas of pitch accuracy, rhythm accuracy, and tone production than students who participated in traditional instruction. Many studies have indicated that cooperative learning positively affects achievement in the general education classroom because it addresses factors that impact student learning such as motivation, participation, practice, and self-efficacy. Because achievement in music, like achievement in the general classroom, was affected by these factors, it was possible that cooperative learning combined with direct instruction might suggest different results in the area of recorder performance than direct instruction alone. This study was initiated in a public school in Kansas and included 61 students ($N=61$). There were two fourth-grade classes and two fifth-grade classes, with one class in each grade randomly assigned to the control ($n=30$) or experimental group ($n=31$). Students met for six class periods of 45 minutes each over a three-week period of time. The control group participated in direct instruction followed by Kagan Cooperative Learning activities, and the experimental group participated in direct instruction followed by teacher-led, whole group practice. Identical written and performance pre- and post-tests were administered to individuals before and after the study was conducted. An analysis of co-variance determined statistical differences between control and experimental groups in the areas of overall score, pitch accuracy, and tone production, but not in the area of rhythmic accuracy.

Table of Contents

Chapter 1: Introduction	1
Elements of Cooperative Learning	4
Presentation of Evidence	4
Background.....	6
Importance of the Study and Statement of the Problem	8
Purpose.....	8
Delimitations and Limitations	8
Definition of Terms	9
Chapter 2: Review of Literature	11
Traditional Learning	12
Group Work	14
Cooperative Learning	15
Task structure.	17
Academic achievement, motivation, and self-perception.....	19
Research that Supports Cooperative Learning and Traditional Approaches	21
Traditional instruction.	21
Group work.....	22
Cooperative learning.....	22
The Music Classroom Context	24
Traditional recorder instruction theories.....	24
Group work in music.	26
Cooperative learning in music.....	27
Research that Supports Cooperative Learning and Traditional Approaches in Music Education	29
Achievement in music.	29
Traditional learning in music.....	33
Group work in music.	33
Cooperative learning in music.....	34
Conclusion	37
Purpose and Research Questions	38

Research questions.	39
Chapter 3: Method	40
Participants.....	40
Procedures	41
Chapter 4: Results	48
Demographic Data	48
Statistical Analysis.....	48
Results.....	49
Research Question 1: Do Kagan cooperative learning activities significantly affect recorder performance skills of fourth- and fifth-grade students in the area of pitch accuracy?	49
Research Question 2: Do Kagan cooperative learning activities significantly affect recorder performance skills of fourth- and fifth-grade students in the area of rhythm accuracy?.....	50
Research Question 3: Do Kagan cooperative learning activities significantly affect recorder performance skills of fourth- and fifth- grade students in the area of tone production?	51
Summary	52
Chapter 5: Conclusions, Discussion, Recommendations.....	53
Summary of Research Question Findings	53
Research Question 1: Do Kagan cooperative learning activities significantly affect recorder performance skills of fourth- and fifth-grade students in the area of pitch accuracy?	53
Research Question 2: Do Kagan cooperative learning activities significantly affect recorder performance skills of fourth- and fifth-grade students in the area of rhythmic accuracy?	54
Research Question 3: Do Kagan cooperative learning activities significantly affect recorder performance skills of fourth- and fifth- grade students in the area of tone production?	54
Discussion	55
Pitch accuracy.	55
Rhythmic Accuracy.	57
Tone production.....	57
Conclusions.....	58
Recommendations for Practice and Implications for Teaching.....	59
Recommendations for Further Research.....	60
Summary	61

References	62
Appendices.....	76

List of Tables

Table 1: Demographic Data	41
Table 2: Pre- and Post-Test Mean Pitch Scores	50
Table 3: Pre and Post-Test Mean Rhythm Scores.....	51
Table 4: Pre- and Post-Test Mean Tone Scores	52

Chapter 1: Introduction

The recorder has been utilized in music making since the 1500s, but it reached the height of its popularity in European Renaissance and Baroque music, during which time it was played by both private citizens and royalty, including Henry VII (Rowland-Jones, 1959; Wade-Matthews & Thompson, 2012). By the 18th century, the recorder had become an established part of the orchestral score for composers such as Bach and Handel (Wade-Matthews & Thompson, 2012). Its popularity fluctuated over the next 100 years until the 1750s, when the transverse flute began to replace the recorder in the orchestra (Rowland-Jones, 1959; Wade-Matthews & Thompson, 2012).

In the early 1900s, Arnold Dolmetsch, who pioneered the reconstruction of obsolete instruments, revived the recorder, producing the first modern recorder and including it in performances of early music (Rowland-Jones, 1959; Wade-Matthews & Thompson, 2012). Through the 1920s, the recorder was considered a high-art instrument to be played by professionals (Williams, 2004), but it steadily grew in popularity because its simplicity and relatively low price met the needs of a general public that desired to make music (Rowland-Jones, 1959).

The recorder was introduced into English schools in the 1930s by Edgar Hunt, who was struck by the instrument's beautiful tone and simplicity of technique (Wade-Matthews & Thompson, 2012; Williams, 2004). He envisioned that recorder education would complement the more modern educational philosophy of the time that children must be emotionally, creatively, intellectually, and physically fulfilled (Williams, 2004). Further, it was thought that the recorder, through its beautiful tone and high quality music making, would uplift the morale of students, helping to form England's new identity after WWI (Williams, 2004).

At the time of their introduction into schools in England, there were two recorder makers in England who each made approximately twenty instruments per year (Williams, 2004). Their exceptionally long waiting lists necessitated that school recorders be imported from Germany, a practice continued until 1939, when WWII forced Hunt to look for other sources (Williams, 2004). He turned to manufacturers in England who began making recorder out of plastic (Williams, 2004). It was believed intonation and voicing would be easier with plastic instruments, and many materials were being rationed with the outbreak of war (Williams, 2004). The plastic recorder flourished in school systems across the globe. Recorder was introduced into the United States by European musicians who immigrated during the 1930s and 1940s, and since then it has continued to rise in popularity for use in amateur and professional music making and in schools (Burakoff, & Hettrick, 1980).

Music educators in America have utilized recorders in instruction for many of the same reasons they were introduced to schools in England: the instrument was inexpensive, easy to play, could play many pitches, and could produce a pleasant tone (Almeida, 2002; Hacket & Lindemann, 2001; Johnstone, 1973; Swanson, 1981). Instructionally, recorders could be used to teach fundamentals of music reading, accompaniment and composition in an authentic way, increasing students' musical understanding and even improving the tone quality of their singing voices (Garretson, 1966; Johnstone, 1973; Nye & Nye, 1957). Playing recorder was also positively correlated to achievement in other areas of music performance, such as band or orchestra, and developed students' ability to enjoy and judge their own music making (Raebeck & Wheeler, 1974; Swanson, 1981). For these reasons, recorder instruction often played a substantial role in the general music education curriculum for many school districts.

Traditionally, methods for teaching record have been teacher-centered, in which the teacher presented information to the class as a whole through explanation and modeling, and then provided opportunities for students to practice individually (Epp 2012; Nye & Nye, 1957; Raebeck & Wheeler, 1974; Yarbrough & Price, 1981). For example, children were instructed to pick up and put down their instruments together, and then play one note at a time as a class after listening to a teacher model (Raebeck & Wheeler, 1974). Alternatively, the teacher could have promoted competition by calling on one student to perform for the class or calling on five or six students in a row, and then having the class vote on their favorite performance (Raebeck & Wheeler, 1974).

However, individual and competitive teaching has been shown to result in a few negative outcomes. For example, competition was shown to be detrimental to achievement in complex tasks, as well as reducing participation in class, placing emphasis only on winning instead of a quality product, and contributing to feelings of unfriendliness and bad attitudes toward others (Abeles, Hoffer, & Klotman, 1984). This was a problem even in classrooms that did not explicitly promote competition: even students working independently competed with one another for grades, attention and praise (Abrami, Lou & Spence, 2000; Hertz-Lazarowitz & Shachar, 1990; Slavin, 1985).

One alternative to traditional instruction was cooperative learning. Cooperative learning was defined as an instructional strategy that included heterogeneous groups of students all participating together toward a common goal that they could not have achieved individually (Cohen, 1994; Johnson & Johnson, 1980; Kagan & Kagan, 2009; Slavin, 1985). Cooperative learning activities exhibited the fundamental elements of interdependence, common goals, individual accountability, participation, and emphasis on social skills and communication

(Djordevic, 2007; Kagan & Kagan, 2009; Johnson & Johnson, 1990, 1994; Torchia, 2013).

Djordevic (2007) and Hunter (2006) noted that working in cooperative groups created opportunities for students to become engaged, active participants in their own learning and addressed multiple levels of learners.

Elements of Cooperative Learning

Kagan and Kagan (2009) described the basic principles of cooperative learning in an acronym: P.I.E.S. which stood for positive interdependence, individual accountability, equal participation, and simultaneous interaction. Interdependence meant that all students in a group worked with one another and that each student benefitted only when all students performed their own part (Cohen, 1994; Johnson & Johnson, 1994; Kagan & Kagan, 2009; Slavin, 1990). A positive correlation for interdependence helped students work together (Johnson & Johnson, 1990; Kagan & Kagan, 2009). Individual accountability, the second element of P.I.E.S., was supported through individual performance, which caused students to feel accountable for the content of the lesson, boosting motivation and participation (Kagan & Kagan, 2009). The third and fourth elements of the P.I.E.S. acronym, equal participation and simultaneous interaction, increased student engagement class-wide by actively engaging many students in the learning process at once (Kagan & Kagan, 2009).

Presentation of Evidence

There has been extensive research in general education regarding cooperative learning (Johnson & Johnson, 1994; Slavin, 1990). Cooperative learning was positively correlated with increases in achievement in a wide range of subjects and grade levels, in many countries across the globe (Kagan & Kagan, 2009; Nastasi & Clements, 1991; Slavin, 1996; Torchia, 2013). Significant differences in achievement between cooperative learning methods and traditional

methods were found in a variety of subjects including elementary math (Gilbert, 2008; Morgan, 1994), secondary math (Lynch, 1996), secondary science (Lazarowitz & Karsenty, 1990) and elementary spelling (Kiarie, 2003).

Cooperative learning has been shown to increase student characteristics which could be positively correlated with achievement (Kagan & Kagan, 2009) such as effort and motivation, attitude toward learning, relationship among students, self-concept, and social skills (Hunter, 2009; Johnson & Johnson, 1994; Lynch, 1996; Nastasi & Clements, 1991; Sharan & Shaulov, 1990; Slavin 1990; Torchia, 2013). Cooperative learning promoted student effort and motivation through using praise in cooperative groups, requiring each individual to contribute to the group, and establishing common group goals (Johnson & Johnson, 1994; Kagan & Kagan, 2009). Student attitude was addressed in a study by Pohlman (1998), in which he found that students who participated in cooperative learning held favorable attitudes towards it and wanted to continue it.

Additionally, cooperative learning helped students meet their social needs and increase social competence by helping learners feel valued (Johnson & Johnson, 1994; Kagan & Kagan, 2009). Students who engaged in cooperative learning activities became more caring, helpful, and understanding of one another (Kagan & Kagan, 1999), which led to higher self-esteem and feelings of being liked and accepted by their classmates (Johnson & Johnson, 1984; Slavin, 1985). Finally, cooperative learning provided opportunities for students to improve their self-perception. Students developed their self-concept through enactive experience, vicarious experience, verbal persuasion and physiological states (Torchia, 2013). During cooperative activities, students were actively engaged (enactive), they watched tasks being performed by others in the group (vicarious), they were praised by others (verbal persuasion) and they

developed relationships with all students that maintained a calm physiological state (Nastasi & Clements, 1991; Torchia, 2013).

There was evidence that cooperative learning could also promote achievement in music. For example, McPherson (2005) and Zimmerman (1986) linked achievement in music performance with meta-cognition and self-regulation, explaining that these skills were best learned and practiced in a social setting before being transferred to individual practice. Meta-cognitive skills, or students' thinking about their own learning, were best taught through verbalization (McPherson & Zimmerman, 2002), with small groups providing a unique setting for encouraging meta-cognitive conversations (Stright & Supplee, 2002). Self-regulation processes, or students' goal-oriented thoughts and actions that transformed their knowledge of skills into performance of skills, were developed through the following stages: observation, emulation, self-control, and self-regulation (McPherson & Zimmerman, 2002; Zimmerman, 1998). The structure of cooperative learning activities mirrored these stages, providing students with opportunities to learn vicariously through a student model (observation), to perform with social assistance (emulation), and to perform without assistance through individually accountable performance (self-control).

Background

Research showed that elements contributing to achievement in the general education classroom were applicable to music education as well. For example, in 2005, Schmidt determined that performance scores in band and students' self-concept were positively correlated. He also found that enactive experiences helped shape the self-concept of his students (Schmidt, 2005). Additionally, the argument for higher levels of participation was supported by Dorow and Greer (1977), who determined that achievement in recorder performance is highly,

positively correlated to the amount of time a student spends performing on-task behaviors,. Finally, Dobbs (2008) found that discussion served both teaching and social functions in middle school band. He concluded that small groups provided students with opportunities to feel like part of the same group; led to more informal discussions; and helped students construct understanding through language by allowing all students to be heard.

Cooperative learning activities in music have consistently shown significant, positive results in lower level, subject knowledge activities. For example, in a 2004 study of college-age students conducted by Holloway, cooperative learning produced significantly higher scores than lecture in the areas of discerning meter, melody and timbre (Holloway, 2004). When they taught the concept of key signatures at the elementary level, Darrow, Gibbs, and Bonner (2005) also found that cooperative learning groups scored significantly higher than those groups participating in traditional instruction.

Despite significantly positive results when applied to lower-level concepts, results were varied when cooperative learning was applied to higher-level, performance tasks. For example, groups of adults and high school students participating in cooperative learning both achieved significantly higher performance scores than students who received direct instruction in group piano classes (Emeleus, 1993; Goliger, 1995). However, in a study involving cooperative, competitive and individual groups in middle school band, Wheeler (1997) concluded that although cooperative groups scored significantly higher for group performance, there were no significant differences between groups for individual performances. Additionally, Cangro (2004) utilized Kagan Cooperative Learning structures to determine the difference between direct instruction and instruction combined with specific cooperative learning activities. He found no

significant difference between cooperative learning and direct instruction for beginning instrumentalists (Cangro, 2004).

Importance of the Study and Statement of the Problem

Cooperative learning has been met with almost unmitigated success in the general education classroom; however, studies in music that utilized cooperative learning in a performance context are relatively few, and produced varying results. Many school districts have begun holding music teachers accountable for cooperative learning methods in the music classroom. As the number of districts embracing cooperative learning initiatives continues to increase, the need for further research regarding cooperative learning and performance outcomes becomes apparent. Given that achievement in music, like achievement in the general classroom, was affected by factors such as motivation, participation, practice, and self-efficacy, and given that cooperative learning has been shown to address these factors, it was possible that cooperative learning techniques combined with direct instruction would yield significantly higher results in the area of recorder performance than traditional instruction alone.

Purpose

The purpose of this study was to determine whether cooperative learning strategies or traditional direct instruction would more positively affect the performance achievement of fourth- and fifth-grade recorder students. It was hypothesized that students participating in cooperative learning activities might perform differently in the areas of pitch accuracy, rhythm accuracy, and tone production than students who participated in traditional instruction.

Delimitations and Limitations

This study was delimited to 61 fourth- and fifth- grade students in the public school in Kansas in which the researcher taught music. Groups were determined by enrollment, so randomization

was not possible. This study was limited by the logistical aspects of working in a school. Class length, schedule, and time of day were determined by building schedules. Additionally, some students were absent during parts of the experiment, and fire and tornado drills occurred during class time throughout the experiment. Data were limited by the extent to which the written and performance assessments were an accurate measure of student skills. Finally, the small number of studies with which to compare this study meant that there was not another study similar enough to use as a model.

Definition of Terms

Traditional learning. Traditional classrooms were largely teacher-centered, and most learning tasks were individual or competitive. Observable characteristics of teacher-center classrooms included (a) the teacher typically spent more time talking than students; (b) most instruction involved the whole group rather than individuals or small groups (c) there was an emphasis on factual information and (d) the classroom was usually arranged with a focus on the teacher (Cuban, 1983).

Traditional groups/Group work. Traditional groups were those in which group membership was homogenous, a leader was typically put in charge, members were not accountable for one another, the group focused on the product not the process, social skills were not directly taught, and there was no emphasis on how each group was working (Johnson & Johnson, 1984).

Cooperative learning. Cooperative learning was defined as an instructional strategy that included heterogeneous groups of students all participating together toward a common goal that they could not have achieved individually (Cohen, 1995; Johnson & Johnson, 1980; Kagan & Kagan, 2009; Slavin, 1985). Cooperative learning differed from group work primarily because

its emphasis on the fundamental elements of interdependence, common goals, individual accountability, participation, social skills and communication, which students were explicitly taught and held accountable for demonstrating throughout group work (Djordevic, 2007; Kagan & Kagan, 2009; Johnson & Johnson, 1990, 1994; Torchia, 2013).

Task structure. Task structure was as an explicitly defined called a structure or cooperative learning script. Task structures did not include content, but referred to what the students were doing, and organized all the interactions in the classroom (Fisher, 2006; Johnson & Johnson, 1994; Kagan, 1985; Kagan & Kagan, 2009).

Chapter 2: Review of Literature

Since the turn of the century, educational practice has been dominated by teacher-centered classrooms, in which teachers have addressed the whole class, and classroom activities have centered on lecture, recitation, and seat work (Cuban, 1983). Similarly, music education in schools has traditionally been teacher-centered, with an emphasis on whole-group instruction, written music, and a question-answer context for discussion. In contrast, progressive philosophy, which originated in the 1920s and 1930s, has focused on student-centered learning, in which students were responsible for their own learning outcomes and worked together to achieve them (Cuban, 1983).

Since the 1980s, progressive philosophies of teaching have been increasingly influential for new instructional approaches such as cooperative learning. Cooperative learning was defined as an instructional strategy that included heterogeneous groups of students all participating together toward a common goal that they could not have achieved individually (Cohen, 1995; Johnson & Johnson, 1980; Kagan & Kagan, 2009; Slavin, 1985). Johnson and Johnson (1990) wrote of the rich history in education of children working together to learn. Theories that supported learning through peer interaction were also noted by Brown and Palinscar (1989) and Kagan and Kagan (2009).

There has been extensive research in general education regarding cooperative learning (Johnson & Johnson, 1994; Slavin, 1990). Cooperative learning has been positively correlated with increases in achievement in a wide range of subjects and grade levels, in many countries across the globe (Kagan & Kagan, 2009; Nastasi & Clements, 1991; Slavin, 1996, Torchia, 2013). Specifically, significant differences in achievement between cooperative learning methods and traditional methods have been found in a variety of subjects including elementary

math (Gilbert, 2008, Morgan, 1994), secondary math (Lynch, 1996), secondary science (Lazarowitz & Karsenty, 1990) and elementary spelling (Kiarie, 2003). Djordevic (2007) and Hunter (2009) noted that working in cooperative groups created opportunities for students to become engaged, active participants in their own learning, and addressed multiple levels of learners. Additionally, cooperative learning has been shown to increase student motivation, self-concept, attitude toward learning, and social skills (Hunter, 2009; Nastasi & Clements, 1991; Torchia, 2013) which can be positively correlated with achievement (Kagan & Kagan, 2009).

This study examined the recorder skills of fourth- and fifth-grade students who participated in either Kagan Cooperative Learning or traditional instruction. The review of literature describes several aspects of cooperative learning related to achievement in both general education and music. First, the fundamental principles of traditional learning, traditional group work, and cooperative learning are presented, followed by a discussion of ways in which traditional and cooperative learning contribute to achievement, motivation, and self-perception. Next, a review of relevant studies of cooperative learning in general education is offered. Finally, theories that supported recorder pedagogy and music achievement are presented, followed by a review of relevant studies in traditional approaches and musical achievement, group work and music, and cooperative learning and music.

Traditional Learning

Traditional classrooms were largely teacher-centered, and most learning tasks were individual or competitive. In a teacher-centered classroom, the teacher controlled instructional time by focusing on specific academic goals, and accomplishing those goals by carefully choosing learning activities, presenting information, and assessing student learning (Cuban, 2001; Weinert & Helmke, 1995). Observable characteristics of teacher-center classrooms

included (a) the teacher spent more time talking than students; (b) most instruction involved the whole group rather than individuals or small groups (c) there was an emphasis on factual information and (d) the classroom was usually arranged with a focus on the teacher (Cuban, 2001).

In traditional instruction, students interacted primarily with printed material and competed with one another for grades, attention and praise (Abrami, Lou & Spence, 2000; Hertz-Lazarowitz & Shachar, 1990; Slavin, 1985). Each student was encouraged to behave in a uniform manner: permission to move around the room was granted by the teacher and student activities focused on teacher lecture and questioning. Students engaged in “simple reciprocation,” in which the teacher asked a closed-ended question, and then called on one student to answer in front of the class (Brown & Palinscar, 1989; Kagan & Kagan, 2009; Rojas-Drummond, Hernandez, Velez, & Villagran, 1998). Individual accountability was promoted through timelines, individual or competitive rewards, praise, and test results (Hertz-Lazarowitz & Shachar, 1990; Morgan, 1994).

Whole-class instruction was observed as possibly the most efficient way for teachers to convey information, ensuring that all students were offered the same exposure to all subject matter (Abrami et al. 2000; Weinert & Helmke, 1995). Stright and Supplee (2002) suggested that some learning strategies were taught most effectively through direct instruction and teacher modeling. Weinert and Helmke (1995) expanded on this, saying, “to the extent that knowledge acquisition and academic performance are the goals, teacher-controlled methods of students’ active learning are superior – especially for younger students and in well-structured subject domains” (p. 139). However, they went on to say that when higher-level thinking, rather than

subject knowledge, was the goal, activities that allowed students to work independently to define and solve their own problems were more likely to be successful.

Group Work

On the other end of the spectrum from teacher-centered learning was a student-centered approach that promoted group work over whole-class instruction. Cuban (2001) described a student-centered approach as one in which students held primary responsibility for what they learned and how they learned it. Student-centered classrooms could be observed as having the following characteristics: (a) students talked equally or more than the teacher; (b) questions were generated by both teacher and students; (c) most instruction was with individuals or small groups; and (d) the classroom was arranged in a way that promoted interaction between students and freedom of movement (Cuban, 2001).

Though group work was more closely related to cooperative learning than traditional learning, there were still important differences between the two approaches. Johnson and Johnson (1984) described traditional groups as those in which group membership was homogenous, a leader was typically put in charge, members were not accountable for one another, the group focused on the product not the process, social skills were not directly taught, and there was no emphasis on how each group was working. Essentially, each individual was focused on particular tasks to contribute to the completion of a project without necessarily collectively making decisions or collaboratively working together.

Traditional groups could increase learning and help with internalization of knowledge or skills, especially when a task was one that could be modeled by an “expert” (Brown & Palinscar, 1989). Additionally, children joined in at their own pace, and it was difficult to distinguish any one person’s work, so no one felt pressure about whether their contribution was acceptable or

sufficient compared to others (Brown & Palinscar, 1989). Many educators have noted that the lack of individual accountability in traditional group work meant that it had a high risk for some students to “hitchhike” on the work of others and not do their share (Johnson & Johnson, 1990; Slavin, 1999). Additionally, lack of interdependence meant that some groups did not want to work together and their interactions detracted from learning, while other groups simply did not see the benefit of working together and used the group only to check answers (Johnson & Johnson, 1994).

Cooperative Learning

Cooperative learning was one approach that combined elements of a teacher-centered classroom with elements of a student-centered one, as students worked in small groups to review ideas or practice skills that were presented during a period of direct instruction (Johnson & Johnson, 1994; Kagan & Kagan, 1999, 2000). Students would be able to practice analyzing, defining, and creating in small groups, which have been shown to be most effective for higher-level skills, after learning basic subject knowledge through direct instruction, which has been shown to be most effective in lower-level learning (Brown & Palinscar, 1989; Weinert & Helmke, 1995). Cooperative learning differed from group work primarily because of its emphasis on the fundamental elements of interdependence, common goals, individual accountability, participation, social skills and communication, which students were explicitly taught and held accountable for throughout learning activities (Djordevic, 2007; Kagan & Kagan, 2009; Johnson & Johnson, 1990, 1994; Torchia, 2013). Without the presence of each fundamental element of cooperative learning, working in groups would not automatically promote achievement (Brown & Palinscar, 1989; Johnson & Johnson, 1990).

Kagan and Kagan (2009) described the basic principles of cooperative learning in an acronym: P.I.E.S. which stood for positive interdependence, individual accountability, equal participation, and simultaneous interaction. A positive correlation for achievement helped students work together: one doing well must be contingent upon others doing well (Johnson & Johnson, 1990; Kagan & Kagan, 2009). This correlation could be built through the use of team rewards, individual encouragement, or students helping each other complete various tasks (Johnson & Johnson, 1990; Kagan & Kagan, 2009).

Interdependence meant that all students in a group worked with one another and that each student benefitted only when all students performed their own part (Cohen, 1994; Johnson & Johnson, 1994; Kagan & Kagan, 2009; Slavin, 1990). Johnson and Johnson (1994) outlined three steps for structuring group interdependence: goal interdependence, role interdependence, and resource interdependence. To achieve goal interdependence, students worked together toward a common goal that could not be achieved by any student on his or her own (Cohen, 1994), resulting in feelings of responsibility for each others' learning (Johnson & Johnson, 1994) and strengthening group interdependence by aligning students' individual goals (Slavin, 1985). Role interdependence required each student to fill a different but vital role in the learning process (Johnson & Johnson, 1994). To achieve resource interdependence, students pooled limited resources to work toward a unified whole (Johnson & Johnson, 1994).

Individual accountability, the second element of P.I.E.S., was closely linked to positive interdependence through Vygotsky's social development theory, which stated that students' individual thoughts were modeled after thought processes first experienced in a group or society (Brown & Palinscar, 1989; Hunter, 2006; Vygotsky, 1987). Johnson and Johnson (1994) found that individual achievement was supported when each student felt responsible for doing his or

her part to help the group. In Kagan Cooperative Learning, individual accountability was achieved when the student performed alone for the class, the teacher, or another student (Kagan & Kagan, 2009). This performance held students accountable for the content of the lesson, boosting motivation and participation (Kagan & Kagan, 2009).

The third and fourth elements of the P.I.E.S. acronym, equal participation, and simultaneous interaction, increased student engagement class-wide (Kagan & Kagan, 2009). Kagan and Kagan (2009) believed that all students should be actively engaged in the learning process, and many students could be actively engaged at once. For example, if Kagan Cooperative Learning structures were utilized, students would have their own roles, and as many as 50% to 100% of students would be engaged in on-task behaviors at any given time (Kagan & Kagan, 2009).

Task structure. The key to success in cooperative learning was to carefully structure each activity so that it incorporated all the fundamental elements of a cooperative experience (Cohen, 1994; Fisher, 2006; Kagan & Kagan, 2009; Slavin, 1996). The “Structural Approach” to cooperative learning organized these elements into an explicitly defined activity that was tied to some kind of content (Fisher, 2006). These activities were called structures or cooperative learning scripts, and did not themselves include content, but referred to what the students were doing, and acted as the organizer for all the interactions in the classroom (Fisher, 2006; Johnson & Johnson, 1994; Kagan, 1985; Kagan & Kagan, 2009). Kagan and Kagan (1999) wrote

[t]he basic premise of the structural approach is that there is a strong relation between what students do and what they learn . . . The construction and acquisition of knowledge, the development of language and cognition, and the development of social skills are largely a function of the situations in which students interact (p. 115).

Kagan Cooperative Learning included over 200 structures to organize group processes (Kagan & Kagan, 2009). Kagan and Kagan (2009) created these structures in response to traditional cooperative lessons, which could be lengthy and were often tied directly with content, necessitating a new structure for each new content area. Their goal was for teachers to learn a few structures that could be applied to many different subjects (Kagan & Kagan, 2009).

Kagan Cooperative Learning structures had varying purposes depending on the learning goal (Kagan & Kagan, 2009). Learning goals could focus on either higher- or lower-level learning (Brown & Palinscar, 1989), with different types of learning requiring different approaches (Cohen, 1994; Kagan & Kagan, 1999, 2009). For example, conceptual learning involved the application of higher-order skills such as deductions or reasoning, while routine learning required concepts to be reviewed through drill or demonstration (Cohen, 1994).

Kagan and Kagan (2009) defined specific functions for their structures, which included both (a) interpersonal functions such as class building, team building, social skills, communication skills, and decision making structures, as well as (b) academic functions such as knowledge building, procedure learning, processing of information, thinking skills, and presentation of information. Knowledge-building involved lower-level learning of information and facts (Kagan & Kagan, 2009). This knowledge was readily accessible and could be applied to new situations (Brown & Palinscar, 1989) but needed to be learned in a highly structured, repetitive way (Cohen, 1994; Kagan & Kagan, 1999). Procedural learning occurred when students practiced academic skills such as investigation, performance, or reading (Kagan & Kagan, 1999).

Once students gained knowledge or skills, other structures helped them work with this information. Structures designed for processing information, or “stop structures,” allowed students to interact with one another using information they had just heard (Kagan & Kagan,

1999). Structures that emphasized higher-level learning were divided into critical thinking or creative thinking skills, such as categorization, analysis, evaluation, summary, deduction, and induction (Kagan & Kagan, 1999). Students engaged in critical thinking when they reflected upon existing ideas or information, while creative thinking usually generated ideas or combined knowledge to create something new (Kagan & Kagan, 1999). Cohen (1994) recommended that higher-level thinking activities should not be as rigidly structured as those activities designed for lower-level thinking.

Academic achievement, motivation, and self-perception. Johnson and Johnson (1994) highlighted three factors they considered most influential for student achievement: student effort and motivation, relationships among students, and student psychological adjustment and social competence. These three factors worked together. Group members' interactions during learning and their feelings about those interactions affected individual motivation. Motivation affected achievement, which determined expectations for the future. Expectations for future performance, in turn, affected motivation (Johnson & Johnson, 1994).

Throughout the literature reviewed, academic achievement and motivation were strongly, positively correlated (Cohen, 1995; Kagan & Kagan, 2009; Lynch, 1996; Schmidt, 2005; Sharan & Shaulov, 1990; Slavin, 1996; Zimmerman, 1998). In research, motivation often manifested in students as effort to achieve, and was measured through overt behaviors such as participation in class discussion, preparing homework, and perseverance in task (Johnson & Johnson, 1994; Schmidt, 2005; Sharan & Shaulov, 1990). Sharan and Shaulov (1990) described motivation as coming from a combination of student orientation toward group work, social status, and prior level of achievement. Slavin (1996) highlighted motivation as a factor to drive cognitive processes, and Cohen (1995) focused on the importance of motivating students to work together.

The ways in which students interacted during learning were important. Cohen (1994) wrote that students with a low social status often had lower participation and influence levels within their groups. To mediate social gaps, groups were encouraged to participate in class- and team-building exercises before the cooperative learning activities began and to engage in praise and affirmations throughout structured activities (Cohen, 1994; Kagan & Kagan, 2009). Kagan and Kagan (2009) also suggested the use of goals that were non-competitive, or challenges such as “see how many you can get” or “how big can you make it.”

Kagan Cooperative Learning offered a very specific view of praise as its own reward. The immediate, frequent, verbal reinforcement provided by group members who gave praise to individuals, or not, in response to on-task behavior served as a tangible reward that increased intrinsic motivation (Fisher, 2006; Kagan & Kagan, 2009). This view was informed by Maslow’s hierarchy of needs, which described students’ desire for “the opportunity to be of value to their classmates, to receive approval and recognition, to be competent, to feel of worth” (Kagan & Kagan, 2009, pp. 4.14). For this reason, positive relationships and social status were important when considering learning outcomes (Brown & Palinscar, 1989).

Cooperative learning helped students meet their social needs and increase social competence by helping learners feel valued (Johnson & Johnson, 1994; Kagan & Kagan, 2009). Students who engaged in cooperative learning activities became more caring, helpful, and understanding of one another (Kagan & Kagan, 1999), which led to higher self-esteem and feelings of being liked and accepted by their classmates (Johnson & Johnson, 1984; Slavin, 1985). Kagan and Kagan (2009) referred to Tajfel’s Social Identity Theory to explain how relationships affected a learner’s psychology: when students felt like they were on the same team, they were more relaxed and free to learn.

The way students perceive themselves and their ability to achieve was another mediator of academic achievement (Bloom, 1975; Lynch, 1996; Slavin 1990). How well students thought they could perform a familiar, precisely-defined task at a given level of difficulty, without comparison to other students was known as their self-efficacy (Torchia, 2013). Students determined their efficacy levels through enactive experience, vicarious experience, verbal persuasion and physiological states (Torchia, 2013). Cooperative learning provided opportunities for students to improve their perception of self-efficacy. During cooperative activities, students were actively engaged (enactive), they watched tasks being performed by others in the group (vicarious), they were praised by others (included verbal persuasion) and they developed relationships with all students that maintained a calm physiological state (Nastasi & Clements, 1991; Torchia, 2013).

Research that Supports Cooperative Learning and Traditional Approaches

Traditional instruction. In an overview of studies regarding traditional instruction, Abrami, et al. (2000) found traditional methods to be characterized by teacher lecture followed by time to practice new skills individually, with explanations and encouragement coming primarily from the teacher, not from peers (Abrami, et al. 2000). In a qualitative study of teacher/student interactions in traditional and cooperative classrooms, Hertz-Lazarowitz and Shachar (1990) observed that teachers utilizing traditional methods maintained control of a whole-class environment in which students were not expected to work together. Interaction between the teacher and students in a traditional environment tended to be formal in nature, while more intimate, pro-social interaction occurred in cooperative learning environments (Hertz-Lazarowitz & Shachar, 1990). Additionally, Brown and Palinscar (1989) observed lower levels of participation in traditional learning environments than in cooperative environments.

Group work. In a meta-analysis of 46 studies involving group work, Slavin (1990) concluded that, “traditional group work, in which students are encouraged to work together but are given little structure and few incentives to do so, has been repeatedly found to have small or nonexistent effect on student learning” (p 31). This is supported in the work of Abrami, et al. (2000) in which it was found that students working in cooperative learning groups performed better than students engaging in other types of learning activities, such as traditional instruction or group work.

Cooperative learning. Research has shown that cooperative learning can increase students’ academic achievement. In meta-analysis of 52 studies, Slavin (1995) found cooperative learning to have significantly positive effects in comparison to teacher-led classrooms. Additionally, Johnson and Johnson (1985) found cooperative learning to be an effective method for teaching conceptual learning outcomes, while Rojas-Drummond, Hernandez, Velez & Villagran (1998) found that it promotes growth in both higher- and lower-level reading skills.

Some research has highlighted the importance of the individual elements of cooperative learning. For example, in Morgan’s (1994) study of individual accountability in three third-grade math classes, the two classrooms assigned to cooperative learning methods scored significantly better than the classroom participating in traditional learning methods in math. Further, out of the two cooperative learning classrooms, the classroom with an individual accountability component scored significantly higher in math achievement than the classroom without it.

Johnson and Johnson (1990) analyzed positive interdependence and individual accountability through a meta-analysis of research studies, and found that without both of these elements, many students cannot transfer group-learned tasks to individual learning and achievement. In a later

study, Johnson & Johnson (1994) found that resource interdependence is not effective by itself, but when it was combined with goal interdependence, it increased achievement. Additionally, Kiarie (2003) found that a group contingency raised spelling scores and reduced disruptive behaviors.

Task structure. Many studies have focused on the importance of controlling student interactions through specificity in task structure of cooperative learning activities. Johnson and Johnson (1994) observed that social interactions had a direct impact on instructional outcomes: the more skillfully children interacted with one another; the higher achievement could be expected. Cohen (1994) also noted that specificity in structure of a cooperative learning experience could reduce conflict and increase task-specific behavior, personal responsibility, and participation. She also observed that even when students have the required social skills for skillful interactions, they still may not know how to help each other effectively in an academic situation. For example, there were instances in which one student in a group simply imitated the teacher, turning the experience into a traditional atmosphere, albeit with a student at the helm (Cohen, 1994).

Cooperative learning and motivation. In a study of student perceptions of group work, Pohlman (1998), found that students who participate in cooperative learning liked it and wanted to continue it. Further, Terwel, Gillies, van den Eden, & Hoek, (2001) observed that students who were trained in cooperative learning engaged in it more often than students who were not trained in cooperative learning.

Many studies have also addressed the effect of cooperative learning on student self-perception. For example, Lynch (1996) found that cooperative learning outcomes affected student self-concept, and that self-concept enhanced student motivation. In their meta-analyses,

Johnson and Johnson (1994) and Slavin (1985) concluded that cooperative learning produced higher levels of self-esteem in students than individual or competitive structures. Torchia (2013) observed that cooperative learning positively affected students' self-efficacy in math. When students had high self-efficacy – they believed they could perform a task well - they exhibited higher levels of effort: they participated more, worked more diligently, and demonstrated perseverance, leading to learning and achievement.

Stevens and Slavin (1995) studied the effect of rewards and determined that without rewards, even those methods which emphasize teambuilding and cooperative processes are no more effective in increasing student achievement than traditional instruction. Slavin (1996) also found that group rewards work best when they are based on the achievement of individuals.

The Music Classroom Context

Traditional recorder instruction theories. A review of literature regarding recorder performance and philosophies of how to teach recorder revealed that most recorder instruction philosophies paralleled traditional instruction. Yarbrough (1981) defined music instruction as a three-step sequence in which (1) the teacher presented a task; (2) students responded to the task; and (3) the teacher provided feedback to students in a manner that stressed positive learning experiences. The methods reviewed agreed upon a number of elements regarding general sequence for teaching recorder, and a few mentioned student/teacher interactions, but none mentioned ways in which students might interact with one another.

Regarding sequence of instruction, McDonald (1987) recommended that the first notes taught on recorder should be the pitches G, A, and B, and that those notes should be taught using a sound-before-sight approach, in which students echo the teacher and learn simple tunes by rote before notation is introduced. She also pointed out an interesting discrepancy between many

theories that support sound before sight, and technique books which start immediately with reading notation. McDonald (1987) had many suggestions for teacher actions, but did not mention student behavior.

Epp (2012) described recorder instruction as a presentation of information followed by individual practice. He also suggested that teachers use individual practice time to walk around the room, offering help and feedback to students, and that assessment should be based on individual achievement. While this model was specific regarding teacher actions, it did not address the students themselves. Garretson (1966) dedicated a section of his book to recorder instruction, describing playing position, breathing technique, and note reading. He, too, recommended teaching simple tunes by rote using the first notes of B, A, and G, followed by notation in later lessons. Garretson (1966) provided an overview of whole-class teaching strategies which included vocalization, clapping, and counting, as well as dividing the class in half to have some students clap/count while others played. Nye & Nye (1957) focused on instruction of the class as a whole, emphasizing musicality of the learning experiences. In their overview of group instruction, they offered a detailed explanation of how to describe embouchure for proper tone production and how to combine singing and recorder into meaningful orchestrations (Nye & Nye, 1957). Though Nye & Nye (1957) explained that children need to feel a sense of love and belonging in order to learn best, they did not detail ways in which students might have interacted with one another to achieve those feelings.

Raebeck and Wheeler (1974) offered the first reference to the students themselves, suggesting that teachers motivate children by modeling complex pieces on recorder, and by facilitating class discussion throughout instruction. Their description of recorder instruction included (a) the sequence in which to teach posture, breathing and various notes – starting with B, A, and G, as

well as (b) specific procedures to teach these skills. Despite their theoretical focus on the students over the teacher, the teaching procedures they suggested mirror procedures used in teacher-centered, traditional general education classrooms. For example, they suggested an individual learning environment in which children picked up and put down their instruments together, then played one note at a time as a class after listening to a teacher model.

Alternatively, Raebeck and Wheeler (1974) recommended a competitive structure in which the teacher called on one student to perform for the class at once, perhaps calling on five or six students in a row, and then had the class vote on their favorite performance.

Abeles, Hoffer, & Klotman (1984) outlined negative effects of competition, concluding it was only shown to be beneficial in simple tasks such as playing scales, but that it could be detrimental to complex tasks such as composition. Additionally, they wrote that competition could reduce participation, place emphasis only on winning, not on producing a quality product, and contribute to feelings of unfriendliness and bad attitudes toward others, particularly when the competition happened between groups.

Group work in music. Many resources referred to children working in small groups for purposes such as creation or composition, playing to learn, and exploration. For example, Swanson (1981) suggested that students work in groups to create sounds and improvisations, saying that group work could enhance instruction in these areas. He suggested that talented students take the lead within their groups, but did not give any indication of desired interactions between the other students who were not the leaders.

Two of the most common approaches in elementary general music, Kodaly and Orff-Schulwerck, both focused on enactive learning, with one approach focusing primarily on singing and the other the consistent use of instruments. The Kodály method emphasized young children

playing in groups with others to enhance learning. Kodály (1990) wrote that children who play musical games with others, either in class or in their free time, have an advantage over children who do not. However, in her essay regarding folk music in the Kodaly approach, Zemky (1990) described a series of lesson plans for older grades that reflected traditional teaching: lessons were presented from the board, followed by whole-group or individual practice.

The Orff-Schulwerk approach emphasized group work in the form of group improvisation, composition, movement, and performance, but offered virtually no guidance for how students should work together (Byers, 2013). Landis and Carder (1990) described the Orff-Schulwerk approach as child-centered, with information presented through direct instruction, followed by group practice. This practice could take the form of whole class or small group practice, and emphasized improvisation, self-evaluation, experimentation, and critical listening (Landis & Carder, 1990).

Cooperative learning in music. Despite the prevalence of cooperative learning in general education, there exists relatively little representation for cooperative learning in music education. Some literature regarding cooperative learning and music focused on the cooperative elements that are inherent in the music classroom and the music making process. For example, Kaplan and Stauffer (1994) wrote that (a) ensemble classes that engaged in a final group performance already have a group goal; (b) students have their own parts, for which they are held individually accountable; and (c) many music classes already engage in simultaneous interaction, with many students performing at once. Kassner (2002) also focused on aspects of cooperative learning that occur naturally in a musical environment. He wrote that (a) students were naturally interdependent, (b) teachers engaged in frequent observation of student skills and (c) there was an emphasis on musically related social skills.

Other general music education resources addressed cooperative learning specifically in small sections or chapters. For example, Campbell and Kassner (2006) described how to group children according to Johnson, Johnson, Holubec and Roy's (1984) model of cooperative learning, as well as the possibility of rewarding groups according to individual achievements, but did not offer details of how students should work together once they were in their groups. The music book provided by Kagan Cooperative Learning provides a number of ways to enhance student learning of lower-level skills, such as identifying note names, instruments, and key signatures; however, prescribed activities within the curriculum are limited when it comes to higher-level learning such as performance or composition (Kagan & Kagan, 2009). For this reason, Kagan and Kagan (2009) suggested adapting various structures to meet specific learning outcomes.

Hackett & Lindeman (2001) were more specific, offering steps for cooperative learning: (a) arranging of space; (b) randomly assigning student groups; (c) identifying team, task, and individual roles; (d) explaining social skills and evaluation criteria; (e) observing all groups; and (f) asking students to share and evaluate achievements. They also presented examples of cooperative learning within music lesson plans, many of which described a group goal as well as a group performance contingency (Hackett & Lindeman, 2001). For example, group goals included children finding things in the classroom that make loud and soft sounds, making and demonstrating an instrument, finding lengths of phrases, and exploring the sounds of rubber bands, and then sharing findings. Despite sharing with the class, individual accountability was not sustained because groups were allowed to choose their representative. Other suggestions did include individual accountability, such as Jigsaw learning of phrases, sharing of roles such as

performer and director, and assigning roles in a performance such as “checker” or “helper” (Hackett & Lindeman, 2001).

Research that Supports Cooperative Learning and Traditional Approaches in Music Education

Achievement in music. A number of studies have been conducted to determine specific factors that promote musical performance achievement on wind instruments. These studies involved teaching techniques such as audiation, teaching by phrase, and creative activities such as improvisation and composition. For example, Doherty (2000) addressed the sound-before-sight method using direct instruction. He wrote that students presented with both reading and playing simultaneously were overwhelmed and they lost motivation. He argued that when taught concurrently, reading and performance skills inhibited each other (Doherty, 2000). Similarly, in a study of beginning wind instrument players, Haston (2004) found that sound before sight does not hinder performance and may in fact aid performance achievement, particularly in students with no prior instrumental training.

In a study by Rohwer (1997), movement helped synchronize sixth-grade band students and improve performance. Rohwer sometimes utilized pairs in movement, but only to add “interest” to the lessons. While movement produced no significant impact on student perception of performance, Rohwer found a statistical difference in students’ synchronicity and maintaining a steady beat during performance on their instrument when compared to students who did not participate in movement.

Some researchers have studied recorder performance outcomes. In 2008, Guderian studied fifth-grade recorder players to determine whether composition and improvisation activities produced significantly different results from traditional instruction. Students in the experimental

group engaged in both individual and group activities that emphasized creativity. Though both the experimental and control groups significantly improved in their playing ability, Guderian (2008) found no significant difference between groups.

McKenna (1975) compared traditional recorder instruction sequences with a technique that taught music in phrases like those taught in language acquisition. Both groups of third- and fourth-grade recorder students were successful in learning to read music, but neither scored significantly higher than the other. He discussed his results in terms of multiple theories of learning, including stimulus/response, language, and concept formation, but not social learning theory (McKenna, 1975).

Liperote (2004) implemented a study involving direct instruction and audiation-based techniques such as improvising, playing by ear, and composition to determine whether playing recorder in third grade affected performance in band. She found that audiation-based instruction on recorder contributed to beginning band achievement.

Evidence that music performance classes could benefit from specifically structured cooperative learning activities was found in a series of articles written by McPherson (2005) and Zimmerman (1986), which linked achievement in music performance with meta-cognition and self-regulation skills. Meta-cognition was defined as students' awareness and knowledge about their own thinking (McPherson & Zimmerman, 2002). McPherson and Zimmerman (2002) stated that most students do not naturally engage in meta-cognitive processes - teachers needed to help students learn how to use meta-cognitive strategies, such as verbalizing thought processes they have about their learning (McPherson & Zimmerman, 2002). Small groups provided a unique setting for encouraging students' meta-cognitive conversations (Stright & Supplee, 2002).

McPherson and Zimmerman (2002) defined self-regulation as students' goal-oriented thoughts and actions that transformed their knowledge of skills into performance of skills. Self-regulation skills were learned socially, and then transferred to individual learning (McPherson & Zimmerman, 2002). Self-regulatory processes were developed through the following stages: observation, emulation, self-control, and self-regulation (McPherson & Zimmerman, 2002; Zimmerman, 1998). According to McPherson and Zimmerman (2002), these important skills are learned most effectively in social situations. For example, positive reinforcement from peers led to individual goal setting and increased self efficacy; help that was provided became help that was sought, and skills practiced in a group such as time management, learning strategies, and performance monitoring became self-monitored skills in individual practice (McPherson & Zimmerman, 2002). The structure of cooperative learning activities mirrored these stages, providing students with opportunities to learn vicariously through a student model (observation), to perform with social assistance (emulation), and to perform without assistance through individually accountable performance (self-control). Meta-cognition and self-regulation determined the quality of students' practice, with feedback from past performances determining students' current performances and future efforts (McPherson & Zimmerman, 2002).

Practice. One study regarding the practice habits of beginning instrumentalists pointed to the influence of the group setting on individual practice. Berg (2008) studied of the practice habits of two 12-year-old beginning instrumentalists over 14 weeks. He observed that the students were motivated to practice by functional aspects such as getting a good grade, and social aspects such as praise and affirmation from the teacher or peers. He also determined that practice strategies were not automatically transferred from a whole-group setting to an individual setting. He suggested enhancing the transfer of strategies by having students participate in reflection

regarding strategy use during whole class instruction. Miksza, Prichard, and Sorbo's (2012) study supports Berg's suggestion, finding that beginning instrumentalists exhibited individual practice behaviors that were highly similar to common rehearsal techniques.

Motivation. Student motivation, which can increase with cooperative learning, has been shown to be an important factor in music achievement. In 1995, Schmidt found a positive correlation between self-concept and motivation in band. He studied the self-concept of 300 seventh-through-twelfth-grade band students and determined that intrinsic motivation is a strong factor in achievement, declaring it "a crucial element in instrumental music education at all levels" (p. 146). He determined that performance scores and self-concept were positively correlated and that enactive experiences helped shape the self concept of his students (Schmidt, 1995).

In 2012, Sears and Pai studied motivation and rewards, specifically investigating what happened to learner motivation when rewards were offered at the beginning of learning, and then removed. They studied 40 undergraduate students who were learning to read music. These students studied with computer guidance either alone or in groups, with half of each set either receiving rewards or not. Halfway through the experiment, participants who had received a reward up to that point were told that there would not be a reward for learning the rest of the material. Overall, groups and individuals who were rewarded performed better on the post-test than those who were not. Of the participants who were rewarded, performance was equal for individuals and groups in the first half, in which a reward was available, but for the second half, those participants working in groups continued to focus on their work and earned high scores, despite the lack of rewards. Sears and Pai (2012) concluded that reward removal does not have as drastic-negative effect on groups as it does on individuals.

Traditional learning in music. Sink (2002) conducted a behavioral research study on teacher-centered music classrooms, observing that most teachers carefully constructed learning sequences to achieve explicit outcomes, and that active involvement increased student attention and was promoted by performance activities, such as playing instruments. She also noted that utilizing contrasting models was an effective teaching tool, but also that many teachers actually did very little modeling (Sink, 2002).

Group work in music. Green (2008) conducted a study of informal music making in high school students in the UK, in which students participated in many weeks of group work, first emulating popular music, and then composing their own pieces. Students formed friend-based groups, and reported high levels of cooperation. Groups communicated either through imitation without words or through discussion of music making, praised one another for working in the group, and felt in control of their own learning. Green cited the importance of a loose structure for this learning experience, saying that too rigid a structure would interrupt the “flow” of creation. He also addressed the problem of free-riders, saying that many students who appeared to be free-riding may not have been - that they may have still played an integral part to the group (Green, 2008).

In her descriptive study of the Orff-Schulwerk method in first, third, and fifth grades, Munson (1986) found that students in an Orff classroom were instructed in a direct style, then spent time working in groups, with fifth-graders spending approximately 20 percent of class time in groups engaged in singing, playing, moving, writing, and creating. Despite the group work and the fact that students were engaged in music activities much of the time, student attitudes and participation declined by fifth grade (Munson, 1986).

In 1980, Alexander and Darrow investigated the effects of peer tutoring versus traditional, direct instruction for beginning band students. They studied 54 fourth graders in three public schools and found that tutees in the peer tutoring groups scored significantly higher than tutees in the direct instruction group, with no detrimental effect to the tutor. Further, Alexander and Darrow (1980) engaged in a second study of 48 fourth- and fifth-graders in three schools and determined that the type of tutoring is important: only tutees whose tutors were trained in “approval techniques” such as praise and modeling scored significantly higher than the control group. Tutees whose tutors were trained in “disapproval techniques” or error correction scored the same as the control group (Alexander & Darrow, 1980).

Cooperative learning in music. Cooperative learning has been implemented in various areas of music at many levels. Cooperative learning approaches have consistently produced significant results in lower level, subject knowledge; however, in performance tasks it has been less consistent.

In 2004, Holloway considered differences between cooperative learning and lecture in 88 college students over the course of one semester in a music appreciation class. Students in cooperative groups engaged in discussion and composition in order to understand the material. Cooperative learning produced significantly higher scores than lecture in the areas of discerning meter, melody and timbre (Holloway, 2004). At the elementary level, Darrow, Gibbs, and Bonner (2005) taught the concept of key signatures through either cooperative groups or direct instruction. They examined the achievement of 104 fifth-grade general music students at two schools, and found significant differences in learning between cooperative groups and direct instruction for both schools (Darrow et al., 2005).

Cooperative learning has also been successful in group piano instruction (Emeleus, 1993; Goliger, 1995). In 1993, Emeleus studied differences between cooperative learning and direct instruction for adult group piano students. He found that cooperative learning groups scored significantly higher on performance achievement than students who received direct instruction (Emeleus, 1993). Additionally, during the 1990-1991 school year, Goliger (1995) researched the difference between cooperative groups and direct instruction in a secondary piano lab. He carefully structured his cooperative learning to include both group and individual rewards and to account for on-task behavior. Goliger (1995) found that students in cooperative learning groups received significantly higher grades on their final performance than students who received direct instruction.

In 1997, Wheeler conducted a study involving cooperative, competitive and individual groups, in middle school band. Wheeler studied 314 students in 12 bands, teaching two etudes and conducting individual and group playing tests after five days of instruction. He found that although cooperative groups scored significantly higher for group performance, there were no significant differences between groups for individual performances. It is of interest to note that Wheeler made no mention of specific structure or system for individual accountability within cooperative groups.

Elements of cooperative learning in music. Research has also highlighted the importance of the fundamental elements of cooperative learning in music. For example, Dorow and Greer (1977) determined that achievement in recorder performance is highly correlated to the amount of time a student spends performing on-task behaviors, supporting the argument for increasing student participation.

In a study of how language is used in middle school band, Dobbs (2008) found that discussion served both teaching and social functions, concluding that small groups provided students with opportunities to feel like part of the same group; led to more informal discussions; and helped students construct understanding through language by allowing all students to be heard. Similarly, in a study of middle school instrumentalists, Jarvis (1981) found that verbalization strategies are beneficial to learning notation, though he did not mention the use of verbalization in small groups.

The need for structure in musical group work was suggested by Bergee in a 2002 study to determine whether group work would influence how well students were able to evaluate their own performances. He researched 29 undergraduate performers initially, with a follow up study of 56 performers from various instrumental and vocal backgrounds. He found that unstructured group feedback had no strong effect on students' self-evaluation skills, supporting the claim that group work needs to be structured. Bergee (2002) recommended that when teaching students to listen and evaluate performances, there needed to be scaffolding, including strong instructor involvement initially, followed by regular follow-up sessions.

Kagan Cooperative Learning in music. In 2004, Cangro utilized Kagan Cooperative Learning structures to determine the difference between direct instruction and instruction combined with specific cooperative learning activities. He investigated the playing abilities of 46 fifth- and sixth-grade students from four schools over 20 weeks. The experimental group engaged in Kagan Cooperative Learning for five minutes out of each twenty-minute class period once a week. He found no significant difference between cooperative learning and direct instruction for beginning instrumentalists (Cangro, 2004). In his discussion, Cangro (2004) outlined factors that may have affected the experimental group's performance. First, he

mentioned his heavy reliance on individual accountability with the absence of a reward structure or group goals, which may have contributed to a lack of motivation and therefore achievement in the experimental group. Additionally, the study may have suffered from both lack of teacher training and lack of students' social skills since it was the first experience with Kagan Cooperative Learning for both teachers and students. Finally, he noted that positive interdependence, social skills, and group processing were not clearly demonstrated by all groups.

Conclusion

Teacher-centered learning was the dominant approach to education for most of the twentieth century (Cuban, 1983). Though this approach was very efficient and was shown to be the most effective way to teach repetitive, lower-level skills, it was not always effective in teaching higher-level skills (Weinert & Helmke, 1999). Beginning in the 1980s, educators began to embrace more student-centered approaches, many of which could be considered group work. Working in groups facilitated internalization of knowledge and skills; however, the ways in which various groups of students worked together did not always bring about the highest level of learning for all students (Johnson & Johnson, 1990; Slavin, 1999).

Cooperative learning could be distinguished from other types of instruction by its fundamental principles of interdependence, common goals, individual accountability, participation, and communication (Djordevic, 2007; Kagan & Kagan, 2009). The success of any group had to be contingent upon the individual successes of its members, and all members had to participate equally, with positive, task-related communication (Cohen, 1995; Johnson & Johnson, 1980; Kagan & Kagan, 2009; Slavin, 1985). Cooperative learning has been shown to boost factors that contribute to achievement such as participation, motivation, and self-concept

(Cohen, 1995; Kagan & Kagan, 2009; Lynch, 1996; Schmidt, 2005; Sharan & Shaulov, 1990; Slavin, 1996; Zimmerman, 1998).

When all the fundamental elements of interdependence, common goals, individual accountability, participation, social skills and communication were present, cooperative learning could increase student achievement significantly more than other types of learning environments (Djordevic, 2007; Kagan & Kagan, 2009; Johnson & Johnson, 1990, 1994; Torchia, 2013); however, including all the fundamental elements was difficult, and many students needed to be taught how to cooperate in a group (Cohen, 1995). Kagan Cooperative Learning designed structures for group work to ensure that students maintained all the elements needed for a successful cooperative learning group (Kagan & Kagan, 2009).

This review has documented that cooperative learning has been met with almost unmitigated success in the general classroom, while results of studies in music have been varied. A review of relevant studies has shown that achievement in music, like achievement in the general classroom, was affected by factors such as motivation, participation, practice, and self-efficacy. Studies in music that utilized cooperative learning in a performance context are relatively few, but indicated that cooperative learning may address performance achievement if all elements are present. Given the need for structure in cooperative learning groups, it was possible that Kagan Cooperative Learning's task centered, structured approach combined with direct instruction would yield significantly higher results in the area of recorder performance than direct instruction alone.

Purpose and Research Questions

The purpose of this study was to determine whether cooperative learning strategies or traditional direct instruction would more positively affect the performance achievement of

fourth- and fifth-grade recorder students. It was hypothesized that students participating in cooperative learning activities might perform differently in the areas of pitch accuracy, rhythm accuracy, and tone production than students who participated in traditional instruction.

Research questions.

1. Do Kagan cooperative learning activities or traditional direct instruction significantly affect recorder performance skills of fourth- and fifth-grade students in the area of pitch accuracy?
2. Do Kagan cooperative learning activities or traditional direct instruction significantly affect recorder performance skills of fourth- and fifth-grade students in the area of rhythm accuracy?
3. Do Kagan cooperative learning activities or traditional direct instruction significantly affect recorder performance skills of fourth- and fifth-grade students in the area of tone production?

Chapter 3: Method

The purpose of this study was to determine whether cooperative learning strategies or traditional direct instruction would more positively affect the performance achievement of fourth- and fifth-grade recorder students. This study was initiated in a public school in Kansas. The participants involved in this study included two classes of fourth-grade students and two classes of fifth-grade students, with one class in each grade randomly assigned to the experimental or control group. Students met for six class periods of 45 minutes each over a three-week period of time. The control group participated in direct instruction followed by Kagan Cooperative Learning activities (see Appendix A for description of structures), a model of instruction typically used in all other music instruction; and the experimental group participated in direct instruction followed by teacher-led, whole group practice, that of traditional direct instruction that was not normally utilized in instruction. A pre-test/post-test, between-subjects design was utilized for this investigation. Students' pitch accuracy, rhythm accuracy, and tone production were assessed using both written and performance pre-tests in the days immediately before the experiment, and written and performance post-tests in the days immediately following the experiment (see Appendix C for assessments). Pre- and post-test data were analyzed using analysis of covariance to determine differences in achievement between groups. This chapter contains details of the population and district, instructional setting, and instruction throughout the experiment, as well as research design, data collection, and assessments.

Participants

This study involved 61 fourth- and fifth-grade students in a mid-sized city in an elementary school in Kansas. The racial profile of the students involved in this study was: 10% African American, 59 % Caucasian, 28% Hispanic, and 3% of two or more races. Sixty-two percent of

students in this school qualified for free or reduced lunch. This study included 31 boys and 30 girls. See Table 1 for demographic data.

Table 1: Demographic Data.

	4 th Grade Control	4 th Grade Experimental	5 th Grade Control	5 th Grade Experimental	Total
Gender					
Male	1	10	10	10	31
Female	10	8	9	3	30
Race					
African American	0	2	3	1	6
Caucasian	4	15	12	5	36
Hispanic	6	1	3	7	17
Multiracial	1	0	1	0	2

One fourth-grade and one fifth-grade class were randomly assigned to the experimental group using a coin flip, while the other fourth- and fifth-grade classes were randomly assigned to the control group. The total sample included 61 students ($N=61$) divided into four groups: fourth-grade experimental ($n=18$), fourth-grade control ($n=11$), fifth-grade experimental ($n=13$), and fifth-grade control ($n=19$). Sample sizes were determined by enrollment in each respective class. Fifth-grade students ($n=32$) had received one year of instruction in recorder, and fourth-grade students ($n=29$) had not. Two students had received prior instruction in another instrument.

Procedures

After receiving human subjects' permission to conduct the study through both the university and public school system, a parent/guardian consent form was provided for students along with a description of the study. A verbal consent script was prepared by the teacher and given to the students. A script and lesson plans of daily activities were prepared by the researcher and given to another teacher to implement. Lessons were recorded to ensure accuracy.

Students attended music class twice a week for 45 minutes and followed the pedagogical sequence of *Recorder Express* (Almeida, 2003). Music class took place in students' general education classrooms, with another teacher, who had been coached by the researcher, acting as the leader for each activity. All the classrooms contained similar technology, including a digital projector and Promethean board, and the desks were structured similarly in groups of three or four students. The experimental group remained in their own desks. Each student in the control group was provided a personal "Recorder Karate" card to display individual achievements. Cooperative groups were assigned new desks and given a group placemat. Each Kagan group placemat identified each child's name, their number and letter within their group, a group recorder to display group rewards, and a "Recorder Karate" card to display individual achievement (see Appendix D2).

All students involved in this investigation had been participating in Kagan Cooperative Learning structures in their general classrooms and in their music classroom, so they were comfortable with working in teams, as well as utilizing Kagan Cooperative Learning. The music teacher for this experiment had six years of teaching experience, with one of those years in the school where the study was conducted. The teacher for this experiment had been utilizing Kagan Cooperative Learning in general music, including recorder instruction, for three years.

The lesson design for both groups included time to review previously learned skills, a time of direct instruction for new skills, and time for student practice. In the experimental group, the teacher led direct instruction activities for all three elements of class. The control group participated in Kagan Cooperative Learning activities for review, then the teacher led direct instruction for learning new skills, and finally, students participated in Kagan Cooperative Learning activities for skill practice (see Appendix B for detailed daily activities).

During each class, the review period for both groups lasted for 10 minutes and focused on previously learned skills such as recognizing, playing, and improvising rhythms or short melodies. In the traditional group, these rhythms and melodies were projected onto the board, and the teacher led students through activities from the front of the room. She alternately called on one student to give the answer for the class, asked students to play as a whole group, or asked them to play in smaller groups by saying something such as, “only girls,” or “only boys.” In the control group, students performed the same recognition, playing, and improvisation activities, but used Kagan Cooperative Learning structures to either coach each other on melody and rhythm cards or listen to each other’s improvisations (see Appendix C for melody and rhythm cards). Kagan structures utilized for warm-ups included those that help build lower-level, subject knowledge, as well as practice skills (see Appendix A for detailed description of Kagan structures).

Direct instruction was the same for both groups and occurred for 15 to 20 minutes. The teacher began each period of direct instruction with a verbal reminder about posture, breath control, and tone, followed by two to three minutes in which students echoed short melodic patterns on their recorders. Then, students were introduced to the new melody or notes when the teacher projected the lesson onto the board.

For the remaining 15 to 20 minutes of class, students practiced the new notes or melodies (see Appendix C2 for melodies). Depending on their familiarity with the material, students practiced by clapping the rhythm, saying the pitches and performing the fingerings, or “chinging” (Almeida, 2003), before playing as a class or in small groups. In the traditional group, the teacher guided students through skill practice from the board, asking them to play as a whole group or breaking the class into smaller sections to perform for everyone else. When she noticed

that the class as a whole or a percentage of the class encountered difficulty with certain elements of the melodies, she guided them through practice by singling out certain measures, having half the class clap while the other half played, demonstrating a technique on her own recorder, or asking one student to model for the class. As the class as a whole became more proficient, she began asking students to analyze which elements of the melodies they played were difficult and which elements went well, calling on one student at a time to share his/her thoughts. In the control group, students participated in Kagan Cooperative Learning structures to practice melodies. For new information, students participated in knowledge-building structures such as “Mix-Freeze-Group,” “Pairs Compare,” “Flashcard Game,” and “Quiz, Quiz, Trade.” To practice skills, the teacher introduced procedural structures such as “Fan ‘n’ Pick,” “Team, Pair, Solo,” and “Rally Robin.” As students became more familiar with each technique or skill, the teacher utilized more advanced structures that required analysis, problem solving, and verbalization skills, such as “Rally Coach,” “Fact or Fiction,” and “Pairs Check” (see Appendix A for detailed description of Kagan structures; See Appendix B for daily activities).

Conditions for encouraging individual student motivation in both groups were based on Recorder Karate (Philipak, 2002) in which students can earn “belts” through correct performance of prescribed melodies determined by the teacher (see Appendix C2 for melodies). In the control group, interdependence was promoted through a symbolic “team recorder” onto which students could place star stickers. Stickers were given for earning belts, working cooperatively, or answering questions during whole-group instruction. Cooperative learning conditions were monitored through the use of exit slips, in which students answered questions about how well their group worked together and whether they felt like a valuable participant in the group.

For this investigation, students were individually assessed to determine whether the independent variables of traditional instruction or cooperative learning had an effect on the dependent variable of recorder performance achievement in the areas of pitch accuracy, rhythm accuracy, and tone production. Written and performance pre-tests were administered immediately before the beginning of the investigation (see Appendix A). All data were based on individual scores. Performance assessments were scored by three experienced music teachers, and written assessments were scored by the researcher after covering students' names.

The written pre-test included three components: lower-level skills in which students identified rhythmic symbols and pitches on a staff; application-level, listening skills in which students differentiated between two rhythms or two melodies in a four-beat, teacher-led example; and higher-level listening skills that involved error recognition of pitch, melody, tone, or a mixture of all three in an eight-beat teacher-led example (see Appendix C1). The teacher played or clapped each example three times with a ten-second pause in between each performance. Written pre-tests were graded by the teacher after the students' names had been covered. Students could score one point for each correct answer on the written pretest, with points deducted for wrong answers on the analysis section. For the control group, written pre-test scores were used to group students heterogeneously by ability according to Kagan and Kagan's (2009) philosophy on grouping. This included one high achieving student, one medium-high, one medium-low, and one low achieving student in each group (Kagan & Kagan, 2009).

Pre-test performances were recorded individually during music class while the rest of the class engaged in a group activity led by another music teacher. Each student was invited into the hallway, where they stood one foot behind a music stand and were recorded using a Apple iPad. Each melody in the performance pre-test consisted of 32 beats. The first and second melody

included the pitches G, A, and B, and the third melody included the pitches G, A, B, and C. Melodies used for pre- and post-tests were the same melodies that students learned in order to earn “belts” for the Recorder Karate cards (see Appendix C2 for melodies). These melodies were folk songs that were not familiar to most students. Melodies were concertedly chosen based on their inclusion of various pitches or variety of rhythmic patterns. Each successive belt added only one new rhythm or one new pitch, thus the sequence of learning was tightly controlled.

The first melody and white belt, “Wacky Waltz,” (Almeida, 2003) included the pitches B, A, and G, and featured only quarter notes and dotted half notes. The second melody and yellow belt, “All Aboard!” (Almeida, 2003), was still limited to the pitches G, A, and B, but included eighth notes (Almeida, 2003). The third melody and red belt, “Humpty Dumpty” (Almeida, 2003), included the pitches G, A, B, and C and included pairs of eighth notes, quarter notes, and half notes. All melodies consisted of 32 beats.

Performance assessments were scored according to pitch, rhythm, and tonal accuracy (Figure C3). Each note counted as one point for each performance component: pitches, rhythms, or tone for a total of three points possible for each note. Notes lasting longer than one beat were scored as one point for the note, regardless of length. Self-corrections immediately after a wrong note were recorded, but were not counted as errors. Similarly, students were allowed to start over one time. If a student decided to try again from the beginning, only the second performance was scored.

Performance assessments were video-recorded using an Apple iPad, and then observed by three unbiased elementary music teachers who are experienced in teaching fourth- and fifth-grade recorder. Performances were observed using the teacher’s television. Observers were instructed to keep a running record of pitch, rhythm, and tonal mistakes on a copy of the music.

They were asked to code any incorrect pitches with “P” above or below the note, any incorrect rhythms as “R”, and any overblown notes as “T” for tone. The researcher later totaled the scores.

A written post-test was administered immediately after the final day of the investigation, scored by the teacher. The post-test was identical to the pre-test. All data were based on individual scores and scored by the researcher after covering students’ names. A pre-test/post-test, between-subjects design was utilized for this investigation. Reliability was established through the pre- and post-test usage. The study’s face validity occurred by having three teachers of recorder view the performance pre- and post-tests and the lessons to determine that the relatedness of all elements was evident, coherent, and appropriate. An analysis of covariance was used to determine whether there was a significant difference set at a .05 alpha level between scores for written and performance skills for the experimental and control groups.

Chapter 4: Results

The purpose of this study was to determine whether cooperative learning strategies or traditional direct instruction would more positively affect the performance achievement of fourth- and fifth-grade recorder students. In this chapter, demographic data are presented first, followed by an analysis of the research questions. Data were collected from written and performance pre- and post-tests from experimental and control groups. Analysis of the data was conducted using SPSS for Windows software.

Demographic Data

This study involved 61 fourth- and fifth-grade students in a mid-sized city in an elementary school in Kansas, 31 of whom were boys and 30 of whom were girls. There were 29 students in fourth grade: 11 in the control group and 18 in the experimental group. There were 32 students in fifth grade: 19 in the control group and 13 in the experimental group.

Statistical Analysis

A pre-test/post-test, between-subjects design was utilized for this investigation. Before students received any instruction, they were given a performance and a written pre-test. After six class periods of recorder instruction, they were given identical performance and written post-tests. Following the experiment, written and performance data for pitch, rhythm, and tone were analyzed and compared. Additionally, total overall scores were compared between groups.

Pre-test and post-test data were analyzed using one-way analysis of covariance to determine whether there was a significant difference ($p < .05$) between experimental and control groups. A test of homogeneity-of-slopes assumption was conducted on all pre- and post-test scores. All population slopes were determined to be homogeneous.

Results

There were 340 points possible for either the pre- or post-test when written and performance scores were combined. Both groups showed improvement in overall combined written and performance scores. The control group achieved higher gain scores overall ($M=37.87$, $SD=15.71$) than the experimental group ($M=31.23$, $SD=15.61$). The results of the ANCOVA indicated significant differences between the pre- and post-test scores of control and experimental groups – $F(1, 59) = 5.661$, $p = .021$ – with the control group achieving significantly more growth overall.

Research Question 1: Do Kagan cooperative learning activities or traditional direct instruction significantly affect recorder performance skills of fourth- and fifth-grade students in the area of pitch accuracy? There were 89 points possible for pitch performance on the performance test and 23 points possible for pitch recognition on the written test, for a total of 112 points possible in the area of pitch. Both groups showed improvement in overall scores for pitch; however, the control group showed higher gain scores over all ($M=11.11$, $SD=5.38$) than the experimental group ($M=7.72$, $SD=5.87$).

A one-way analysis of co-variance was used to determine whether differences in pre- and post-test scores were significant between the experimental and control groups. The results of the ANCOVA in the area of pitch performance indicated significant differences between the scores of the control and experimental groups – $F(1, 59) = 8.028$, $p=.006$ – with the control group achieving more growth in pitch performance. The results of the ANCOVA in the area of written pitch recognition indicated significant differences between the gain scores of the control and experimental groups – $F(1, 59) = 9.876$, $p=.003$ – with the control group achieving more growth in pitch performance. Table Two shows pre- and post-test means for pitch.

Table 2: Pre- and Post-Test Mean Pitch Scores.

Group	Pitch performance pre-test mean *	Pitch performance pre-test SD	Pitch performance post-test mean *	Pitch performance post-test SD	Pitch written pre-test mean**	Pitch written pre-test SD	Pitch written post-test mean**	Pitch written post-test SD
Control	5.03	9.34	25.38	8.34	4.97	1.86	6.84	1.07
Experimental	3.36	7.82	17.61	11.8	4.57	1.83	5.76	1.47

*out of 89 possible points

**out of 22 possible points

Research Question 2: Do Kagan cooperative learning activities or traditional direct instruction significantly affect recorder performance skills of fourth- and fifth-grade students in the area of rhythm accuracy? There were 93 points possible for rhythm on the performance test and 24 points possible for rhythm recognition on the written test, for a total of 117 points possible in the area of tone. Both groups showed improvement in overall scores for rhythm. The control group showed higher gain scores over all ($M=8.78$, $SD=5.25$) than the experimental group ($M=7.77$, $SD=4.87$).

A one-way analysis of co-variance was used to determine whether differences in pre- and post-test scores were significant between the experimental and control groups. The results of the ANCOVA in the area of rhythm performance indicated no significant differences between the gain scores of the control and experimental groups – $F(1, 59) = 3.673$, $p=.060$ – however, the control group achieved more growth in rhythm performance. The results of the ANCOVA in the area of written rhythmic recognition indicated no significant differences between the gain scores of the control and experimental groups – $F(1, 59) = .143$, $p=.71$ – but the control group also achieved more growth in rhythm recognition. See Table Three for particular results.

Table 3: Pre and Post-Test Mean Rhythm Scores.

Group	Rhythm performance pre-test mean *	Rhythm performance pre-test SD	Rhythm performance post-test mean *	Rhythm performance post-test SD	Rhythm written pre-test mean**	Rhythm written pre-test SD	Rhythm written post-test mean**	Rhythm written post-test SD
Control	6.28	5.8	22.88	6.80	5.8	1.36	6.75	1.44
Experimental	3.28	4.88	17.74	10.13	4.88	1.11	5.97	1.26

*out of 93 possible points

**out of 24 possible points

Research Question 3: Do Kagan cooperative learning activities or traditional direct instruction significantly affect recorder performance skills of fourth- and fifth- grade students in the area of tone production? There were 89 points possible for tone production in the performance test and 11 points possible for tone recognition on the written test, for a total of 100 points possible in the area of tone. Both groups showed improvement in overall scores for tone. The control group showed higher gain scores over all ($M=10.31$, $SD=5.81$) than the experimental group ($M=8.64$, $SD=5.31$).

A one-way analysis of co-variance was used to determine whether differences in pre- and post-test scores were significant between the experimental and control groups. The results of the ANCOVA in the area of tone production indicated significant differences between the gain scores of the control and experimental groups – $F(1, 59) = 6.04$, $p=.017$ – with the control group achieving more growth in tone performance. The results of the ANCOVA in the area of written tone recognition indicated no significant differences between the gain scores of the control and experimental groups – $F(1, 59) = 1.338$, $p=.252$ – although the control group achieved more growth in tone performance. See Table Four for the means of the pre- and post-tests.

Table 4: Pre- and Post-Test Mean Tone Scores.

Group	Tone production pre-test mean *	Tone production pre-test SD	Tone production post-test mean *	Tone production post-test SD	Tone written pre-test mean**	Tone written pre-test SD	Tone written post-test mean**	Tone written post-test SD
Control	5.57	10.11	25.7	6.68	9.73	2.07	10.23	1.27
Experimental	3.69	7.76	19.46	11.25	9.03	2.30	10.55	1.06

*out of 89 possible points

**out of 11 possible points

Summary

The results of this experiment indicated that both groups achieved higher scores on the written and performance post-tests than on the pre-tests. The control group had higher gain scores in all areas; however these scores were only statistically significant in the areas of overall post-test scores, pitch performance and written accuracy, and tone performance.

Chapter 5: Conclusions, Discussion, Recommendations

Though cooperative learning has been shown to boost factors that contribute to achievement in music such as participation, motivation, and self-concept (Brown & Palinscar, 1989; Cohen, 1995; Kagan & Kagan, 2009; Lynch, 1996; Nastasi & Clements, 1991; Schmidt, 2005; Sharan & Shaulov, 1990; Slavin, 1990, 1996; Torchia, 2013; Zimmerman, 1998), the results of studies utilizing cooperative learning in the music classroom have been varied. Cooperative learning approaches have produced significant results in lower level, subject knowledge (Holloway, 2000; Darrow, Gibbs, & Bonner, 2005). Studies in music that utilized cooperative learning in a performance context are relatively few, but indicated that cooperative learning may address performance achievement if all elements are present (Cangro, 2004; Emeleus, 1993; Goliger, 1995; Wheeler, 1997). The purpose of this study was to determine whether cooperative learning strategies or traditional direct instruction would more positively affect the performance achievement of fourth- and fifth-grade recorder students. This chapter presents the interpretation and possible explanations of the results.

Summary of Research Question Findings

Based on the findings of this study, cooperative learning could have a positive impact on recorder performance. The results of the ANCOVA indicated significant differences between the combined written and performance pre- and post-test scores of control and experimental groups – $F(1, 59) = 5.661, p = .021$ – with the control group achieving more growth overall.

Research Question 1: Do Kagan cooperative learning activities or traditional direct instruction significantly affect recorder performance skills of fourth- and fifth-grade students in the area of pitch accuracy? The results of the ANCOVA in the area of pitch performance indicated significant differences between the control and experimental groups – F

(1, 59) = 8.028, $p=.006$ – with the control group achieving more growth in pitch performance.

The results of the ANCOVA in the area of written pitch recognition indicated significant differences between the control and experimental groups – $F(1, 59) = 9.876, p=.003$ – with the control group achieving more growth in pitch performance.

Research Question 2: Do Kagan cooperative learning activities or traditional direct instruction significantly affect recorder performance skills of fourth- and fifth-grade students in the area of rhythmic accuracy? The results of the ANCOVA in the area of rhythm performance indicated no significant differences between the control and experimental groups – $F(1, 59) = 3.673, p=.060$ – however, the control group achieved more growth in rhythm performance. The results of the ANCOVA in the area of written rhythmic recognition indicated no significant differences between the control and experimental groups – $F(1, 59) = .143, p=.71$ – but the control group also achieved more growth in rhythm recognition.

Research Question 3: Do Kagan cooperative learning activities or traditional direct instruction significantly affect recorder performance skills of fourth- and fifth- grade students in the area of tone production? The results of the ANCOVA in the area of tone production indicated significant differences between the control and experimental groups – $F(1, 59) = 6.04, p=.017$ – with the control group achieving more growth in tone performance. The results of the ANCOVA in the area of written tone recognition indicated no significant differences between the control and experimental groups – $F(1, 59) = 1.338, p=.252$ – although the control group achieved more growth in tone performance.

Discussion

Overall, the results demonstrated that there were significant differences between the experimental and traditional groups. We might speculate that students' interactions may have contributed to the control group achieving greater results in this study; however, the fact that the control group showed higher pre-test scores than the experimental group suggests that the participants were already ahead in terms of achievement. On the other hand, although the control group's pre-test scores were generally higher than those of the experimental group, that group still showed significantly different results. Thus, we might suggest that the structure of teaching and learning may have been responsible for that difference.

Pitch accuracy. Reading pitches on a staff using letter names and performing them on an instrument was a relatively new skill for most students in this study. All students had experienced reading pitches using solfege syllables in previous grades, but recorder practice was the first time that most students had the opportunity to read pitches on the staff with fluency using letter names. Additionally, even if students knew the pitch letter names from experience on another instrument, it would have been impossible to demonstrate the correct pitches during performance without knowing the corresponding finger positions.

While it is not clear exactly what contributed to the differences in scores between the experimental and control groups, the results of the investigation do suggest that a factor or factors were instrumental in producing different results. One factor that may have affected student scores was social interaction. In music research, Jarvis (1981) found that verbalization strategies are beneficial to learning notation, and Dobbs (2008) found that discussion served both teaching and social functions, highlighting the importance of social interaction. In general education, individual achievement was influenced by the students' experiences within a group;

therefore, it could follow that specificity in structuring social interactions would positively affect achievement (Cohen, 1994; Johnson & Johnson, 1994). For example, Johnson and Johnson (1994) observed the way students interacted had a direct impact on instructional outcomes: when children interacted skillfully with one another, higher achievement could be expected. In music research, positive reinforcement from peers led to individual goal setting and increased self-efficacy; help that was provided became help that was sought, and skills practiced in a group such as time management, learning strategies, and performance monitoring became self-monitored skills in individual practice (McPherson & Zimmerman, 2002).

Opportunities for individual playing may have also affected students' pitch accuracy. Students in the control group consistently performed alone for the class, the teacher, or another student instead of performing mostly in small groups or as a whole class (Kagan & Kagan, 2009). According to Kagan and Kagan (2009), individual performance could have held students more accountable for the content of the lesson, and could have boosted motivation and participation. Additionally, this performance allowed students to hear their own playing to an extent that would have been difficult with the whole class or a group of students all playing the same thing at the same time.

Finally, the interactions imbedded in Kagan Cooperative Learning structures provided an opportunity for each student to get individual, immediate feedback on his or her performance, which may have prevented practicing the music incorrectly (Kagan & Kagan, 2009). This idea was supported by a study by Alexander and Darrow (1980) in which beginning band students engaged in either traditional instruction or peer tutoring. Students in this study whose tutors used "approval techniques" such as praise and modeling scored significantly higher than students in the control group for this study, who engaged in traditional learning.

Rhythmic Accuracy. Unlike pitch accuracy, all students in this study had extensive background knowledge in the area of rhythmic accuracy. They had practiced this skill frequently throughout previous music instruction, which included both traditional learning activities and Kagan Cooperative Learning activities. It is possible that both groups had enough background knowledge in this area that the specific activities involved in this study were not a great enough percentage of their total experience to have a significant impact, particularly on the written test.

Additionally, rhythmic accuracy during performance could be difficult to achieve without pitch accuracy. The difficulty of learning to interpret both pitches and rhythms at the same time, and then perform them on an instrument, was highlighted by Doherty (2000), who argued that when taught concurrently, reading and performance skills inhibited each other. It is possible that, given a longer time frame, students would gain more confidence reading pitches, which would reduce the number of times they paused between notes as well as allow them to concentrate on rhythmic accuracy. One might also speculate that the focus on pitch and rhythm simultaneously could have influenced the results, perhaps allowing the participants to focus on one element they perceived as being easier. Finally, it is interesting to note that six students in the control group played the third melody, “Humpty Dumpty,” in 3/8 time. It is unclear whether they taught each other the incorrect rhythms or whether they knew the nursery rhyme from previous experience, but they achieved low scores in the area of rhythmic accuracy in part because they played in the wrong meter.

Tone production. Like pitch production, tone production was a new skill for many students in this study because it was directly tied to knowing how to play the recorder, which was a new skill for many students in this study. Therefore, pre-test scores could have been lower compared to post-test scores, allowing for growth in the post-test. For example, even if students knew how

to create a good tone on the recorder, it would have been impossible to demonstrate it during performance without knowing the corresponding pitches.

On the other hand, students had extensive background knowledge in the area of tone recognition because it was a skill they had been practicing with vocal technique throughout their elementary music instruction. It is possible that both groups had enough background knowledge in this area that the specific activities involved in this study were not a great enough percentage of their total experience to have a significant impact.

The area of tone production, like the area of pitch production, may have been influenced by the interactions of students. Individual accountability within cooperative learning structures could have made it easier for students to ensure they were using a pleasant tone by helping them differentiate their playing from the playing of those around them. It is also possible that feedback from other participants regarding tone production helped the experimental group to achieve greater results (Kagan & Kagan, 2009).

Conclusions

Based on the results of this study, it might be concluded that cooperative learning can increase recorder performance more than teacher-led instruction. However, because this study was done with two classes of fourth and two classes of fifth grade, there is no way to know whether results can be generalized. It is possible that the control group included students with higher musical aptitude or better learning focus than students in the experimental group. Finally, time and space constraints during performance pre- and post-tests may have affected the outcome, as different students had to perform their songs on different days or in slightly different environments due to scheduling and teacher availability.

In this study, both the students and the teacher had previous experience with cooperative learning; therefore, most cooperative groups worked well with each other and maintained the essential elements of cooperative learning throughout the study. Both traditional and cooperative learning groups appeared to be equally motivated to learn solos on their own, but the cooperative groups also showed more interest in the progress of their classmates. Additionally, in a study of student perceptions of group work, Pohlman (1998) found that students who participated in cooperative learning liked it and wanted to continue it, so it may have also been a negative adjustment for the traditional groups to learn in a way that was different from their normal music class instruction, which included Kagan Cooperative Learning. It is also possible that the teacher's demeanor and presentation changed slightly between experimental and control groups because of her personal preference for cooperative learning over traditional instruction. In other words, the teaching and learning approach may have confined their learning, ultimately affecting the results.

Recommendations for Practice and Implications for Teaching

Many music educators have utilized recorders in instruction because the instrument was inexpensive, easy to play, could play many pitches, and could produce a pleasant tone (Almeida, 2002; Hacket & Lindemann, 2001; Johnstone, 1973; Swanson, 1981). Instructionally, recorders could be used to teach fundamentals of music reading, accompaniment and composition in an authentic way, increasing students' musical understanding and even improving the tone quality of their singing voices (Garretson, 1966; Johnstone, 1973; Nye & Nye, 1957). Additionally, a desire to progress with their recorder playing motivated students to learn basic skills such as note reading (Johnstone, 1973; Raebeck & Wheeler, 1974). Finally, playing recorder was positively correlated to achievement in other areas of music performance, such as band or orchestra, and

developed students' ability to enjoy and judge their own music making (Raebeck & Wheeler, 1974; Swanson, 1981). For these reasons, recorder instruction has often played a substantial role in the general music education curriculum for many school districts.

Kagan cooperative learning could be significantly helpful in teaching recorder performance skills because it has been shown to increase student characteristics which could be positively correlated with achievement (Kagan & Kagan, 2009) such as effort and motivation, attitude toward learning, relationship among students, self-concept, and social skills (Bloom, 1975; Hunter, 2009; Johnson & Johnson, 1994; Lynch, 1996; Nastasi & Clements, 1991; Sharan & Shaulov, 1990; Slavin 1990Torchia, 2013). Additionally, by explicitly teaching social skills, cooperative learning promoted positive student interactions and built relationships that extended beyond the classroom setting (Johnson & Johnson, 1984; Slavin, 1985). Finally, cooperative learning activities provide novelty in learning: many activities were fun and engaging, and a variety of activities to teach any given concept could have increased student participation and attitude (Kagan & Kagan, 2009; Pohlman, 1998).

Recommendations for Further Research

Many school districts have begun holding music teachers accountable for cooperative learning methods in the music classroom. As the number of districts embracing cooperative learning initiatives continues to increase, the need for further research regarding cooperative learning and performance outcomes becomes apparent. Though the findings of this study were promising, further research in the area of cooperative learning and music performance is warranted. The following areas may be of interest:

1. This study was limited by enrollment and attendance. A study could be initiated with a larger sample size to determine if different results might be found.

2. Groups in this study were limited by class enrollment. A study could be initiated using a random sample.
3. Further research could investigate more closely the connection between specific types of cooperative learning activities and performance. It is possible that certain structures would have more impact on learning than others.
4. Future research could be initiated to explore specific ways in which cooperative learning may influence students themselves during recorder instruction, such as increased on-task behavior during instruction, motivation, attitude toward content, and positive interactions with others. These responses were observed in students in cooperative groups, but results were not recorded.

Summary

This research study found a statistically significant relationship between cooperative learning and recorder performance in the areas of overall scores, pitch performance and written accuracy, and tone performance. Reading music on the staff and playing it on an instrument was a foundational skill that could positively affect student success in future music endeavors. The use of cooperative learning may have increased this achievement more than traditional instruction, but it also emphasized social skills and relationships that would possibly keep students motivated to be actively involved in music throughout their lives. Awareness of this relationship is important to the idea of building life-long music learners and musicians.

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Appendix A: Description of Kagan Structures

Mix-Freeze-Group

“Mix Freeze-Group” (Kagan & Kagan, 2009) was a knowledge-building structure in which students walked to music in various pathways around the room, then stopped to listen when the music stopped. The teacher performed one of four rhythms on the board, which were numbered one through four (See Appendix E1 for rhythm cards). Students had to identify the correct rhythm and assemble into groups the same size as that rhythm’s number. For example, if the teacher clapped rhythm two, students formed pairs. Students who did not have a partner went to the “lost and found” at the front of the classroom and worked as their own group or were absorbed into another group.

Pairs Compare

“Pairs Compare” (Kagan & Kagan, 2009) was a knowledge-building structure in which students provide answers in pairs. Students were given one minute to work with the shoulder partners and practice rhythms on as many cards as possible. After one minute, the teacher rang the triangle to indicate time, and the pairs chose one card at a time to perform for the other pair. When one pair had performed a rhythm, it was “checked off” for that time, and the other group had to choose something different. Pairs took turns performing, offering praise in the form of a Kagan cheer between each turn.

Rally Coach

“Rally Coach” (Kagan & Kagan, 2009) was a critical thinking structure in which one partner performed or answered at a time while the other partner offered praise or coaching. First, partner A performed. Partner B either offered coaching, telling which notes were right or wrong, or used a Kagan cheer as praise. For the next phrase or pattern, partners switched roles.

Fan ‘n’ Pick

“Fan ‘n’ Pick” (Kagan & Kagan, 2009) was a procedural-learning structure in which a group of four students was given a set of cards to practice. Student 1 fanned the cards and told Student 2 to “Pick a card, any card!” Student 2 picked a card and read the pitch names to Student 3, using the correct rhythm. Student 4 responded to Student 2 by cheering if he said the pitches and rhythm correctly, or tutoring for either pitch or rhythm accuracy if Student 2 was incorrect. After Student 2 read the card correctly, Student 3 played it on his or her recorder. Student 4 also responded to Student 3 with either praise or tutoring. Student 2 discarded the card into the middle, and students rotated roles, one person clockwise for each round. When all the cards had been used, students started over.

Quiz, Quiz, Trade

“Quiz, Quiz, Trade” (Kagan & Kagan, 2009) was a knowledge-building structure in which students received one card each with a four-beat pattern on it. First, the teacher instructed students to “Stand Up, Hand Up, Pair Up,” which meant that students would stand, put their hand in the air, and find any partner in the room, then give them a high-five and put their hands down (Kagan & Kagan, 2009). The teacher indicated a random characteristic of one partner, such as the person with the longest hair, or the taller of the two people, that would indicate he or she would show his or her card first. Once partner A had been established, partner B played the pattern on partner A’s card, and partner A either offered a cheer if their partner played it correctly, or a tip, such as saying the pitch letter names, if the performance was incorrect. Partners switched roles. After both partners had performed one another’s cards and cheered for one another, they traded cards and thanked each other before putting their hands up to find another partner through “Stand Up, Hand Up, Pair Up” (Kagan & Kagan, 2009).

Fact-or-Fiction

The structure “Fact-or-Fiction” (Kagan & Kagan, 2009) was a critical thinking structure in which students listen to see whether group members played patterns that were written down or if they improvised a new pattern. For this structure, each group placed four cards containing four-beat melodies face up in the middle of the group. Each person either chose one card to practice silently for thirty seconds or took thirty seconds to make up his or her own pattern. Student 1 started by playing either a card or an improvised melody. If the other students thought Student 1 played a pattern written on one of the cards, they would respond by echoing that pattern. If the other students thought Student 1 improvised his or her own melody, they would respond by playing nothing, shaking their heads, and saying “fiction.” At the end of each turn, students celebrated their success by giving each other a high-five, and the game rotated to Student 2, 3, and then 4.

Team-Pair-Solo

“Team, Pair, Solo” (Kagan & Kagan, 2009) was a procedural-learning structure in which all four students played the song together. Then, Student 1 and 3 performed while students 2 and 4 observed, offering either praise or tutoring. Next, students 2 and 4 performed while students 1 and 3 observed, offering either praise or tutoring. Finally, students performed individually in the order of 1, 2, 3, 4.

Pairs Check

“Pairs Check” (Kagan & Kagan, 2009) was a critical thinking structure in which each person answered a closed-ended question individually, then reached consensus with their group. First, shoulder partners checked their answers with one another, offering praise or coaching to come to a consensus. Then, shoulder partners checked with the other pair in their group to reach a whole-

group consensus. For recorder, after the teacher's mistake had been identified, students practiced the two measures together correctly. In the last section, students practiced identifying the mistakes as either rhythmic, pitch, or tone.

Rally Robin

“Rally Robin” (Kagan & Kagan, 2009) was a procedure-learning structure that gave students a chance to practice skills by answering open ended questions. For this structure, the students used think time to come up with potential four-note phrases to have their partner echo, and then took turns sharing and echoing their patterns.

Appendix B: Daily Activities

Day 1

Review: Clapping Rhythms (5 minutes).

Rhythmic Accuracy: Identifying and clapping rhythms. Students clapped four-beat rhythm patterns using cards from *Cooperative Learning in Music*, “What’s My Rhythm?” (Katz & Brown, 2011). Then, the teacher placed four rhythm pattern cards on the board at the front of the room (See Appendix E1), labeled them with numbers one through four, and clapped one of the four rhythms. After two repetitions, students held up the number that corresponded with the rhythm card performed, and then they practiced performing it as a class. The control group performed the structure “Mix-Freeze-Group” (Kagan & Kagan, 2009) while the experimental group continued holding up the number of fingers corresponding to the correct card. Once two rhythms had been revealed, the class practiced performing both rhythms consecutively.

Direct Instruction: Recorder technique and the note B (20 minutes).

Tone production: Playing position and posture. The teacher described and demonstrated playing position for recorder using a teacher model: shoulders were relaxed back, the spine was straight, arms were relaxed at the sides, and the recorder bell was pointed roughly 45 degrees, or toward the floor in front of the knees (Rowland-Jones, 1959). The teacher described where to put the hands, with the left hand at the top and the fingers hovering over the holes, and where to place the thumbs, demonstrating on her own instrument. Then the teacher described the shape of the hands, using the example of a “squishy letter c.” She had students practice making the shape with their own hands before placing fingers on the instrument.

Tone production: Breathing technique. The teacher described breathing technique for recorder as using a gentle breath (Rowland-Jones, 1959). First, students were instructed to

practice blowing gently on their own hands by making “cool air” and “warm air” (Almeida, 2014). The teacher then told students that warm air is recorder air (Almeida, 2014). The teacher asked students to demonstrate posture and playing position then described the position for the fingers to create the pitch B: the left thumb covering the thumb hole and the first finger of the left hand covering the top hole of the recorder. Students practiced blowing warm air on the note B individually for a few seconds

Rhythmic accuracy: Playing rhythms on the pitch B. The teacher projected cards on the board that showed the pitch “B” written on a staff using the same rhythms as “What’s My Rhythm?” (Katz & Brown, 2011) Students practiced the cards one at a time (See Appendix A2 for cards).

Practice: Playing the note B (15 minutes).

Rhythmic Accuracy: Playing rhythms on the pitch B. The experimental group engaged in teacher-led practice using rhythm cards projected onto the board which had four-beat rhythms of quarter notes, quarter rests, and eighth notes written on the pitch B on the staff (See Appendix A2 for cards). Students practiced as a group, and then the teacher revealed eight cards on the board. Students were given one minute to practice as many of the cards as possible, then the teacher called on one student or a pair of students at a time to play a rhythm of their choice in front of the class. When one person/pair had performed a rhythm, it was “checked off” for that time, and the other individuals had to choose something different. Students in the control group played the same game in cooperative groups using the structure “Pairs Compare” (Kagan & Kagan, 2009).

Day 2

Review: Rhythms on the pitch B (5-7 minutes).

Rhythmic Accuracy: Identifying and playing rhythms on the pitch B. Students used the same rhythm cards to play the same guessing game as the previous day (See Appendix E1), but this time the teacher played one of four rhythms, and the students guessed which rhythm she played by showing the number on their fingers. After the correct number was revealed, students performed it together as a class on the pitch B. Similarly to the previous day, the control group performed the structure “Mix-Freeze-Group” (Kagan & Kagan, 2009) while the experimental group continued holding up the correct number on their fingers.

Direct Instruction: Recorder technique and the pitch A (10 minutes).

Tone production: Posture, playing position, breathing technique. The teacher reviewed correct posture, playing position and breathing. She asked one student to demonstrate as a class how not to sit, and how not to hold the recorder, and then asked students to critique and fix the model student’s posture. Next, she asked students to show correct posture and hand position, checking individual students as she reminded the class where to place hands and fingers. Finally, she had students practice making warm air on their hands before returning to the recorder and learning the finger position for the pitch A.

Rhythmic accuracy: Playing rhythms on the pitch A. The teacher projected page four from *Recorder Express*, titled “Playing the Note A” (Almeida, 2003). She described the fingering chart demonstrated on the page and compared the fingering chart for A with the fingering chart for B, highlighting similarities and differences between the two fingerings. Students practiced clapping and counting, then playing each of three 16-beat rhythms on page four.

Practice: Echoing B and A (5 minutes).

Melodic accuracy: echoing B and A. After playing rhythms on only the pitch A, the teacher invited students to individually practice moving their middle fingers up and down to change back and forth between the pitches A and B, encouraging them to watch its motion and make sure they were covering the holes (Rowland-Jones, 1959). After 30 seconds of practice, the teacher asked the students to be her echo on three pitch patterns the pitches B and A. The teacher asked the whole class to respond, then just boys, then just girls, and the whole class again. Echo practice was continued until the group began to be consistently successful. Students in the control group evaluated their partners' echoes using the Kagan structure "Rally Coach" (Kagan & Kagan, 2009).

Direct Instruction: Playing the pitches B and A (10 minutes).

Melodic accuracy: Reading and playing the pitches B and A. The teacher projected page four of *Recorder Express* which is titled "Playing B and A" (Almeida, 2003). She asked individual students to offer similarities and differences between the quarter notes that represented the pitches B and A on the staff. Then, students practiced vocalizing the letter B or A for each respective pitch, using correct rhythm. If the rhythm was incorrect, students were instructed to practice clapping and counting first, and then they vocalized using pitch letter names. After correct vocalization, students were invited to "chinger," or to put the recorder on their chins, say the note names, and perform the correct positions with their fingers (Almeida, 2014). Finally, students played each of the three 16-beat exercises.

Practice: Playing the pitches B and A (10 minutes).

Melodic accuracy: Reading B and A. Students practiced playing B and A using a set of cards with four-beat melodies written on them that included the pitches B and A using the same

rhythms as “What’s My Rhythm?” (Katz & Brown, 2011). First, students practiced chinging each phrase using the correct letter name for each pitch. The teacher led the experimental group through a series of cards on the board, while the control group practiced using hard copies of the same set of cards in the structure “Fan ‘n’ Pick” (Kagan & Kagan, 2009). (See Appendix E3)

Day 3

Review: Echoing B and A (5 minutes).

Melodic Accuracy: Echoing B and A. Review on Day 3 was teacher led for both groups. The teacher reviewed the finger position for B, and then asked students to echo four-beat rhythms only on the pitch “B”. Next, the teacher reviewed the finger position for A, and asked students to echo four-beat rhythms only on the pitch “A”. Finally, she invited students to individually practice moving their middle finger up and down to change back and forth between the pitches A and B, encouraging them to watch its motion and make sure their fingers were covering the holes. After 30 seconds of practice, the teacher asked the students to be her echo on three-pitch patterns using the pitches B and A. The teacher asked the whole class to respond, then just boys, then just girls, and the whole class again. Echo practice was continued until the group was consistently successful.

Practice: Playing the pitches B and A (5 minutes).

Melodic Accuracy: Reviewing B and A on the staff. The teacher called on students one at a time to suggest tips they remembered from previous class periods about posture, playing position and breathing technique. She projected four-beat cards onto the board that included the pitches B and A (See Appendix E3). After practicing a few cards as a class, students in the control group used hard copies of the same cards and participated in the Kagan structure “Quiz, Quiz,

Trade” (Kagan & Kagan, 2009), while the experimental group continued through the series of cards projected onto the board.

Direct Instruction: Playing the pitch G (10 minutes).

Melodic and rhythmic accuracy: Playing rhythms on the pitch G. The teacher described the finger position for the note G, asking students to look at their fingers and make sure they were covering all the holes. She also had students hold the position for the pitch G, then look for full circles on their fingers to see if their fingers were sealing the holes (Rowland-Jones, 1959). Finally, the teacher asked students to practice blowing extremely soft, warm air, and echo four-beat rhythm patterns using only the pitch G. Next, she projected page five from *Recorder Express*, titled “Playing the Note G” (Almeida, 2003). She described the fingering chart on the page and compared the fingering chart for G with the fingering charts for B and A, highlighting similarities and differences between the three finger positions. Students practiced clapping and counting, then playing each of three 16-beat rhythms on page five.

Practice: Playing rhythms on the pitches B, A, and G. (10 minutes).

Melodic and rhythmic accuracy: Playing the pitches B, A, and G. The teacher used each measure of the white belt, “Wacky Waltz,” (Almeida, 2003) to create rhythm cards, which were projected onto the board (See Appendix E5). Students practiced using correct rhythms and chinging B, A, or G for each pattern (Almeida, 2014). If the rhythm was incorrect, students were instructed to practice clapping and counting before “chingering” again. After correct vocalization, students were invited to play each card. The control group used hard copies of the same cards to perform the structure “Flashcard Game” (Kagan & Kagan, 2009).

Direct Instruction: “Wacky Waltz” (5 minutes).

Melodic accuracy: Introducing “Wacky Waltz”. To finish the class period, the teacher projected “Wacky Waltz” from *Recorder Express* onto the board (Almeida, 2003). She invited students to say, chinger, and then play the piece, and then described how students could earn individual “belts” by playing the song as a solo.

Day 4

Review: Playing the pitches B, A, and G (5 minutes).

Melodic accuracy: Practicing B, A, and G. The teacher projected four cards from either the white or yellow belts onto the board (See Appendix E5 and E6). The teacher either chose to play a card that was displayed or a pattern that wasn’t displayed on the board. If the teacher played a card from the board, the class responded by echoing the card they thought she played. If the teacher played a pattern that was not on the board, students did not echo anything, shook their heads, and said “fiction”. At the end, if it was a card on the board, students revealed which card it was by saying the number out loud, and the class played it together. After five minutes, students in the experimental group were invited to choose one card to practice silently for thirty seconds or take thirty seconds to make up their own pattern. One student at a time was invited to either play a card on the board or play his or her own melody. If the class thought the individual played a card on the screen, they echoed that card. If they thought he or she had played his or her own melody, they echoed nothing and shook their heads, saying “fiction”. The control group played the same game by participating in the Kagan structure “Fact-or-Fiction” (Kagan & Kagan, 2009).

Direct Instruction: “Wacky Waltz” and “All Aboard!” (10 minutes).

Rhythmic and melodic accuracy: Reviewing white belt. The teacher projected “Wacky Waltz” from *Recorder Express* (Almeida, 2003). She invited students to say pitch names, chinger, and then play the piece two measures at a time. The teacher suggested that finding skips, such as the skip from G to B in measure 4, was a good way to know which sections of the music need to be practiced more than the others. As a class, students practiced moving their fingers from G to B.

Rhythmic and melodic accuracy: Introducing the yellow belt. The teacher projected “All Aboard!” from *Recorder Express* (Almeida, 2003). She invited students to clap the rhythm, say the pitch names, chinger, and then play the piece two measures at a time.

Practice: “Wacky Waltz” and “All Aboard!” (25 minutes).

Pitch and rhythm accuracy: Practicing the white and yellow belts. Students in the control group practiced tracking each note on individual copies of the music using pointers for both the white and yellow belts. Then students practiced playing as a group using their individual copies. Finally, students were invited to audition for their belts one at a time in front of the class. The control group practiced white and yellow belts using the Kagan structure “Group, Pair, Solo” (Kagan & Kagan, 2009).

Day 5

Review: Improvising on the pitches B, A, and G (5 min).

Rhythmic accuracy: Improvising on four-beat rhythms using B, A, and G. The teacher projected a four-beat rhythm card on the board from “What’s My Rhythm?” (Katz & Brown, 2011). The teacher instructed students to play the correct rhythm on any pitches, B, A, or G, saying that it did not matter which of the three pitches they played, only that there could be no

“squeaks,” students had to use correct posture and the rhythm had to be correct. The control group participated in the structure “Flashcard Game” to improvise melodies over the given rhythms (See Appendix E1 for cards).

Practice: “All Aboard!”

Melodic and rhythmic accuracy: Practicing the yellow belt. Students practiced the yellow belt by chingering, then playing cards with four-beat sections of the melody written on them (See Appendix E6). The control group practiced the yellow belt cards using the structure “Rally Coach” (Kagan & Kagan, 2009), while the experimental group played through the cards projected onto the board.

Direct Instruction: Playing the pitch C and “Humpty Dumpty” (15 minutes).

Melodic and rhythmic accuracy: Playing rhythms on the pitch C. The teacher projected page 11 from *Recorder Express*, titled “Playing the Note C” (Almeida, 2003). She described the fingering chart demonstrated on the page and compared the fingering chart for C with the fingering charts for B, A, and G, highlighting similarities and differences between the four finger positions. The teacher then asked students to place their hands in the playing position for the pitch C, asking them to look at their fingers and make sure they were covering all the holes. The teacher asked students to echo four-beat phrases on the pitch C. Finally, students practiced clapping and counting, chingering, and then playing the first of three 16-beat rhythms that featured quarter notes, quarter rests, eighth notes, half notes and/or whole notes. After practice from page 11, students practiced playing phrases including the note C using four-beat cards projected on the board (See Appendix E7).

Melodic and rhythmic accuracy: Introducing the red belt. The teacher projected “Humpty Dumpty” from *Recorder Express* (Almeida, 2003). She invited students to clap the rhythm, say pitch names, chinger, and then play the first phrase.

Practice: “Humpty Dumpty” (15 minutes).

Melodic, rhythmic, and tonal accuracy: Practicing the melodies. Students in the control group chingered and played “Wacky Waltz” (Almeida, 2003). The teacher projected “All Aboard!” onto the board (Almeida, 2003). Students practiced verbalizing the entire piece slowly. Then, they chingered and played it. Finally, students practiced “Humpty Dumpty” by playing four-beat sections of the melody projected onto the board (See Appendix E8). After practicing two-measure phrases by themselves, students played the entire melody. The control group practiced “Humpty Dumpty” (Almeida, 2003) using the same four-beat sections of the melody written on cards for the structure “Fan ‘n’ Pick” (Kagan & Kagan, 2009). Once the groups had gone through all the melody cards for “Humpty Dumpty,” they raised their hands, and melody cards for “Wacky Waltz” and “All Aboard!” were incorporated into the structure (See Appendix E5 and E6).

Day 6

Review: Improvising on the pitches B, A, G, and C (10 min).

Rhythmic accuracy: Improvising on four-beat rhythms using B, A, G, and C. The teacher projected a four-beat rhythm card on the board (See Appendix E1), instructing students to play the correct rhythm on any pitches, B, A, G, or C, saying that it did not matter which pitches they chose, but there could be no “squeaks,” students had to use correct posture, and the rhythm had to be correct. The control group participated in the structure “Flashcard Game” (Kagan & Kagan, 2009) to improvise melodies over the given rhythms.

Direct Instruction: Identifying mistakes (15 minutes).

Melodic and rhythmic accuracy: Identifying mistakes in “Humpty Dumpty”. The teacher passed out individual copies of the song “Humpty Dumpty” (Almeida, 2003) that outlined two measures of the melody at a time, telling students she was going to play the each section, and that they should circle the mistakes on their individual papers. In the first section, she was going to make a rhythmic mistake; in the second, a melodic mistake; in the third, a tonal mistake; and in the fourth, students would need to identify whether the mistake was rhythmic, melodic, or tonal. For the control group, the teacher invited one student to the board at a time to circle any mistakes and tell what they were for each section. The control group engaged in the Kagan structure “Pairs Check” (Kagan & Kagan, 2009). Once the mistake had been identified, students practiced playing those two measures together correctly.

Practice: “Wacky Waltz” and “All Aboard!” (7 minutes).

Melodic and rhythmic accuracy: Practicing the white and yellow belts. The teacher projected “Wacky Waltz,” followed by “All Aboard!” onto the board (Almeida, 2003). Students chingered each melody, then played it. Students in the control group practiced the belts using the structure “Rally Coach” (Kagan & Kagan, 2009).

Practice: “Humpty Dumpty” (7 minutes).

Melodic and rhythmic accuracy: Practicing the red belt. For the experimental group, the teacher projected cards onto the board that contained four-beat sections of the red belt, “Humpty Dumpty” (Almeida, 2003) (See Appendix E8). After students practiced then performed each of the cards, the teacher projected the entire melody onto the board (Almeida, 2003). Students practiced clapping and counting, verbalizing, chingering, and then playing the song. The control group practiced “Humpty Dumpty” (Almeida, 2003) using hard copies of the same four-beat

sections, written on cards for the structure “Fan ‘n’ Pick” (Kagan & Kagan, 2009). After moving through all the melody cards, students were instructed to practice the entire melody using the structure “Rally Coach” (Kagan & Kagan, 2009).

Appendix C: Pre- and Post-Tests

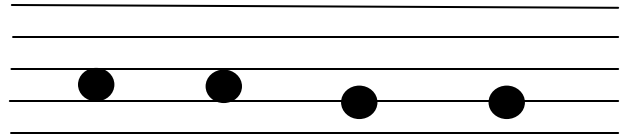
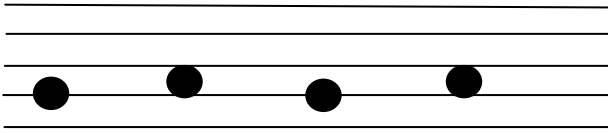
Figure C1: Written assessment

Name _____

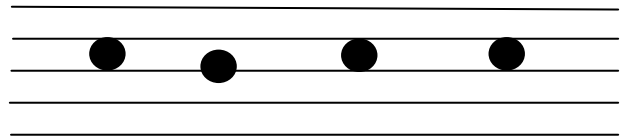
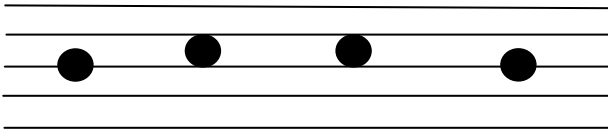
RECORDERS!

Listen!

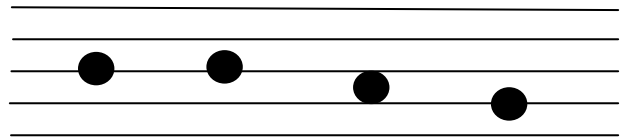
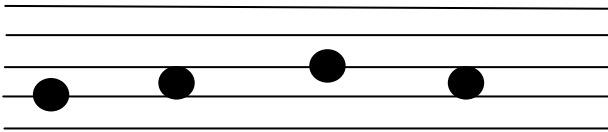
Circle the melody you hear



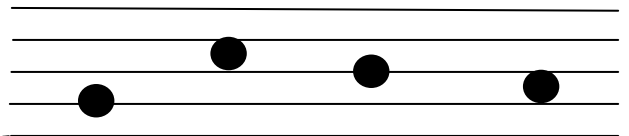
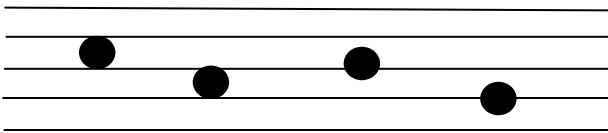
Circle the melody you hear



Circle the melody you hear

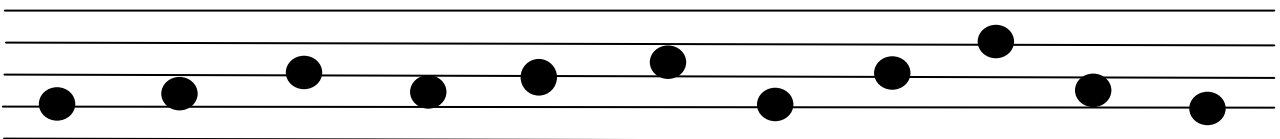


Circle the melody you hear



Read!

Label each pitch G, A, B, C or D

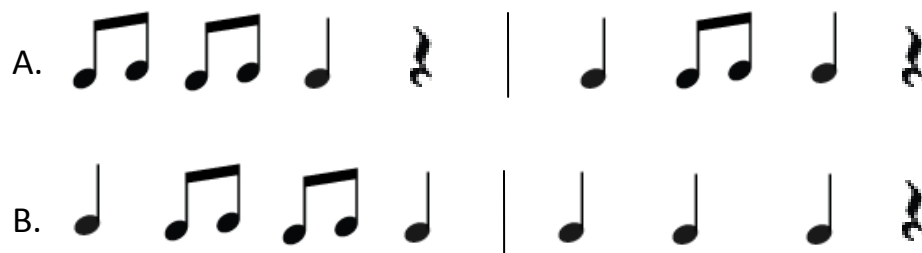


Listen!

1. Circle the rhythm you hear



2. Circle the rhythm you hear



3. Circle the rhythm you hear



4. Circle the rhythm you hear



Listen!

1. Listen to Mrs. Stewart play this song on her recorder. Circle any notes that aren't the correct pitch.



2. Listen to Mrs. Stewart play this song on her recorder. Circle any notes that aren't the correct rhythm.



3. Listen to Mrs. Stewart play this song on her recorder. Circle any notes that don't have a gentle tone.



4. Listen to Mrs. Stewart play this song on her recorder. Did she make any mistakes? Circle the note and explain what her mistake was.



Remember!

What is it called?

How many beats?













White Belt

Yellow Belt

Red Belt

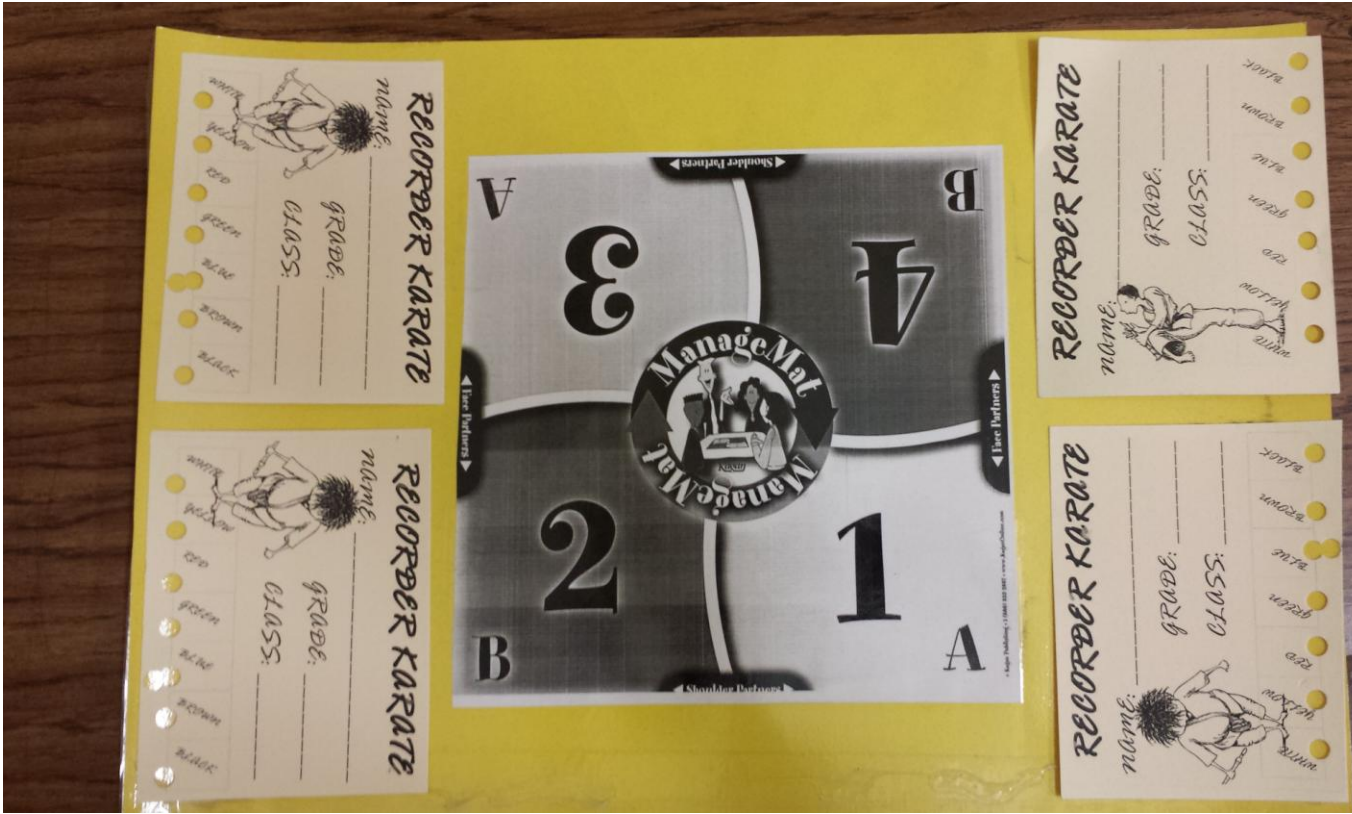
94

Figure C3: Performance Rubric

Student # _____

_____	incorrect pitches	_____	incorrect rhythms
	<i>Subtract one point per beat from total beats</i>		<i>Subtract one point per beat</i>
<i>from total beats</i>			
_____	squeaks		
	<i>Subtract one point per beat from total beats</i>		

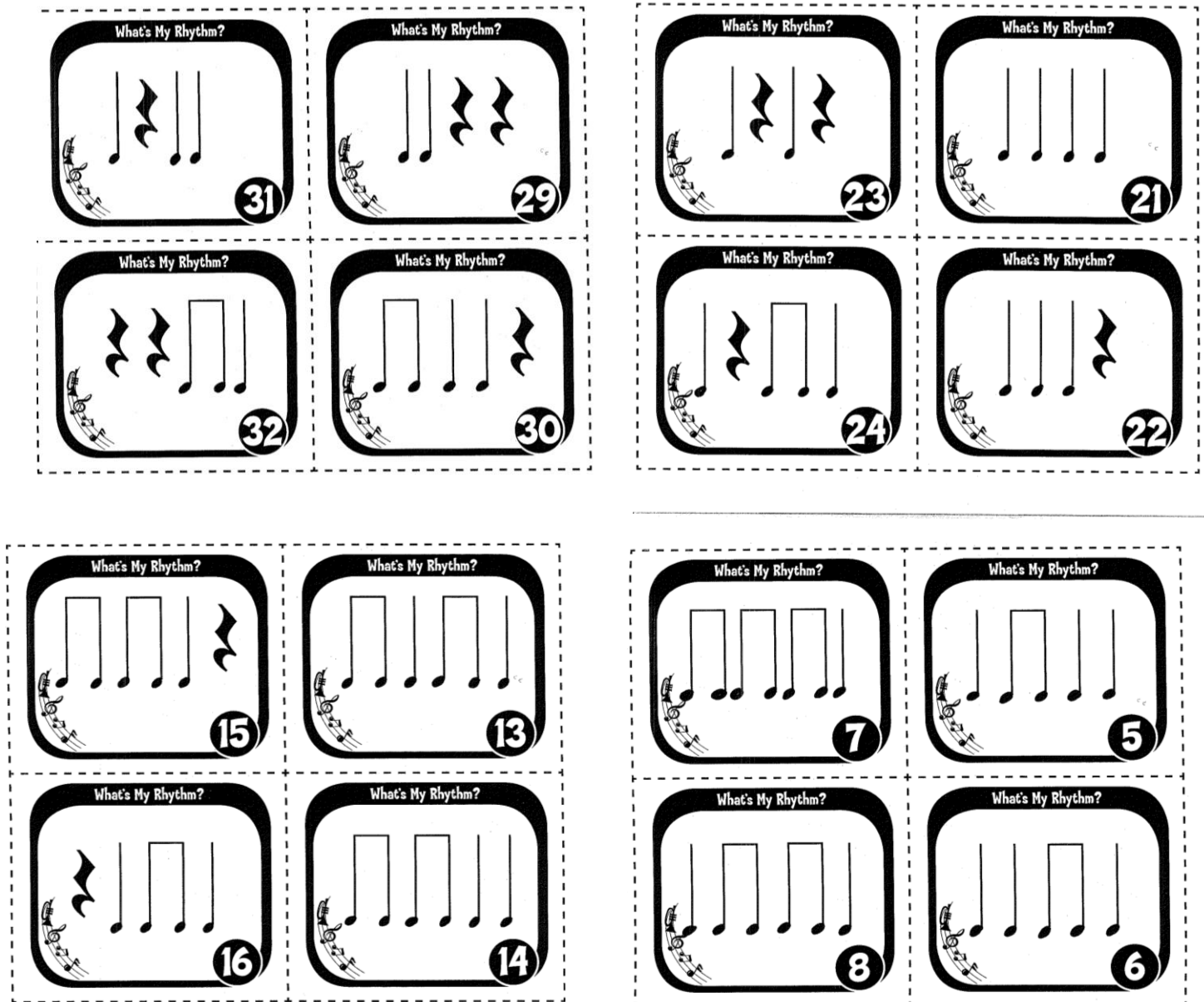
Appendix D: Group Placemat



Appendix E: Rhythm and Melody Cards

Figure E1: Rhythm Cards

These cards were used on Day 1, 2, 5, 6



(Katz & Brown, 2011)

Figure E2: Flashcards using the pitch “b” written on the staff.

These cards use the same rhythm patterns as “What’s My Rhythm?” (Katz & Brown, 2011) and were used on instructional day 1.

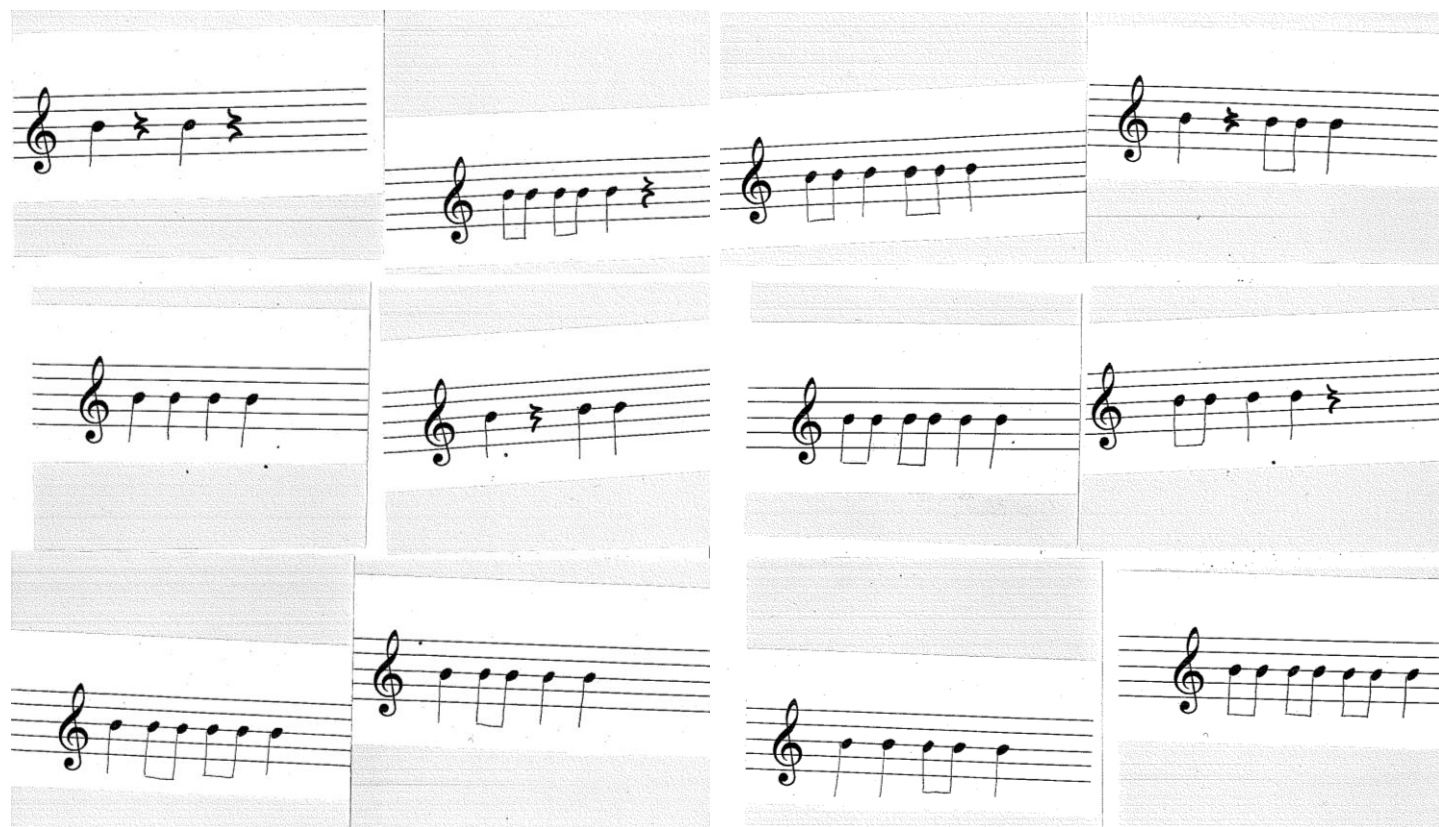
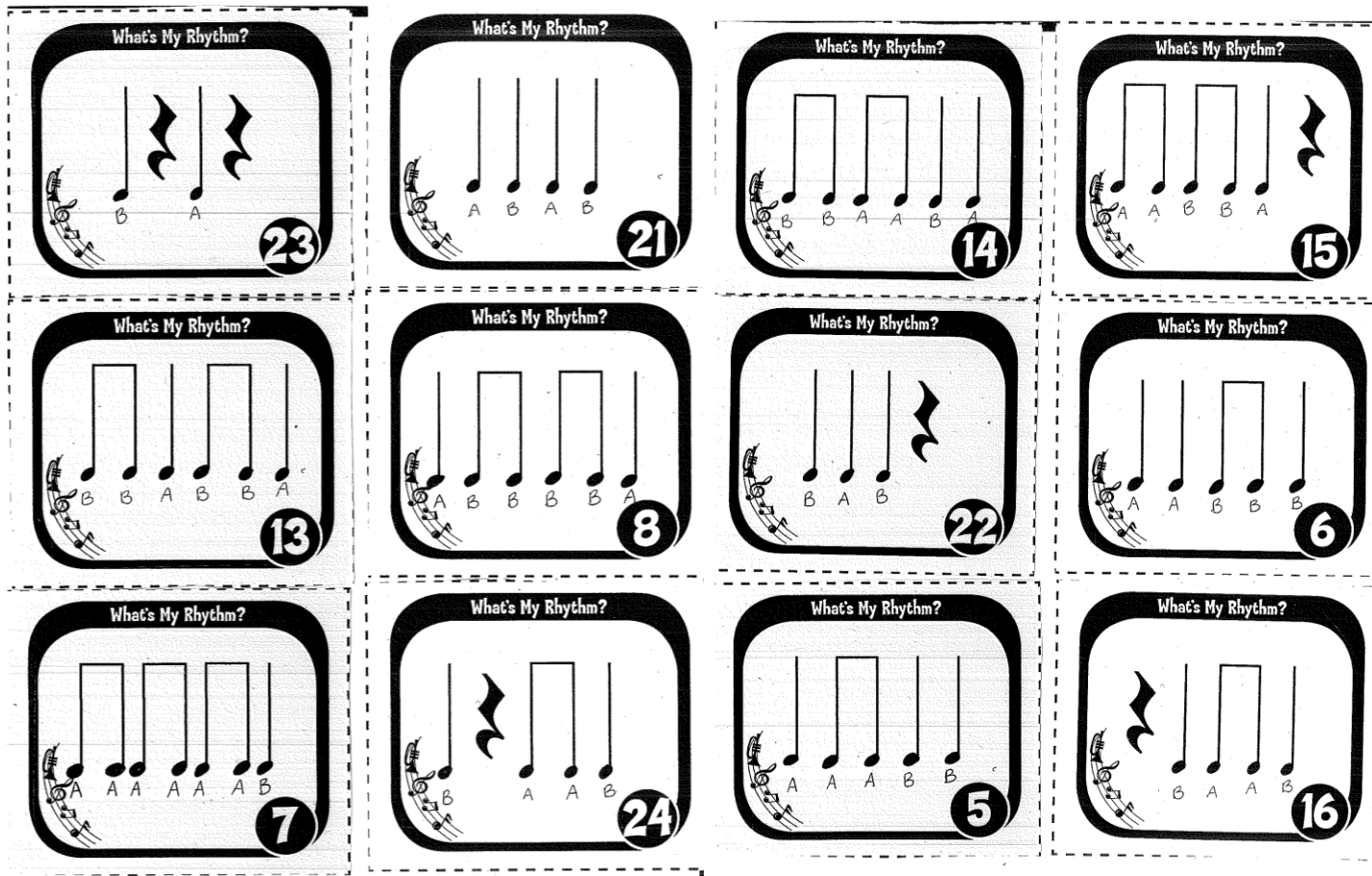


Figure E3: Rhythm cards with pitch letter names A and B.

These cards were used on instructional day 2.



(Katz & Brown, 2011)

These cards contained the same rhythms as “What’s My Rhythm?” (Katz & Brown, 2011) and were used on instructional day 3.



Figure E5: Flashcards with one measure of the white belt, “Wacky Waltz” (Almeida, 2003) written on each card.

These cards were used on instructional day 4, 5.

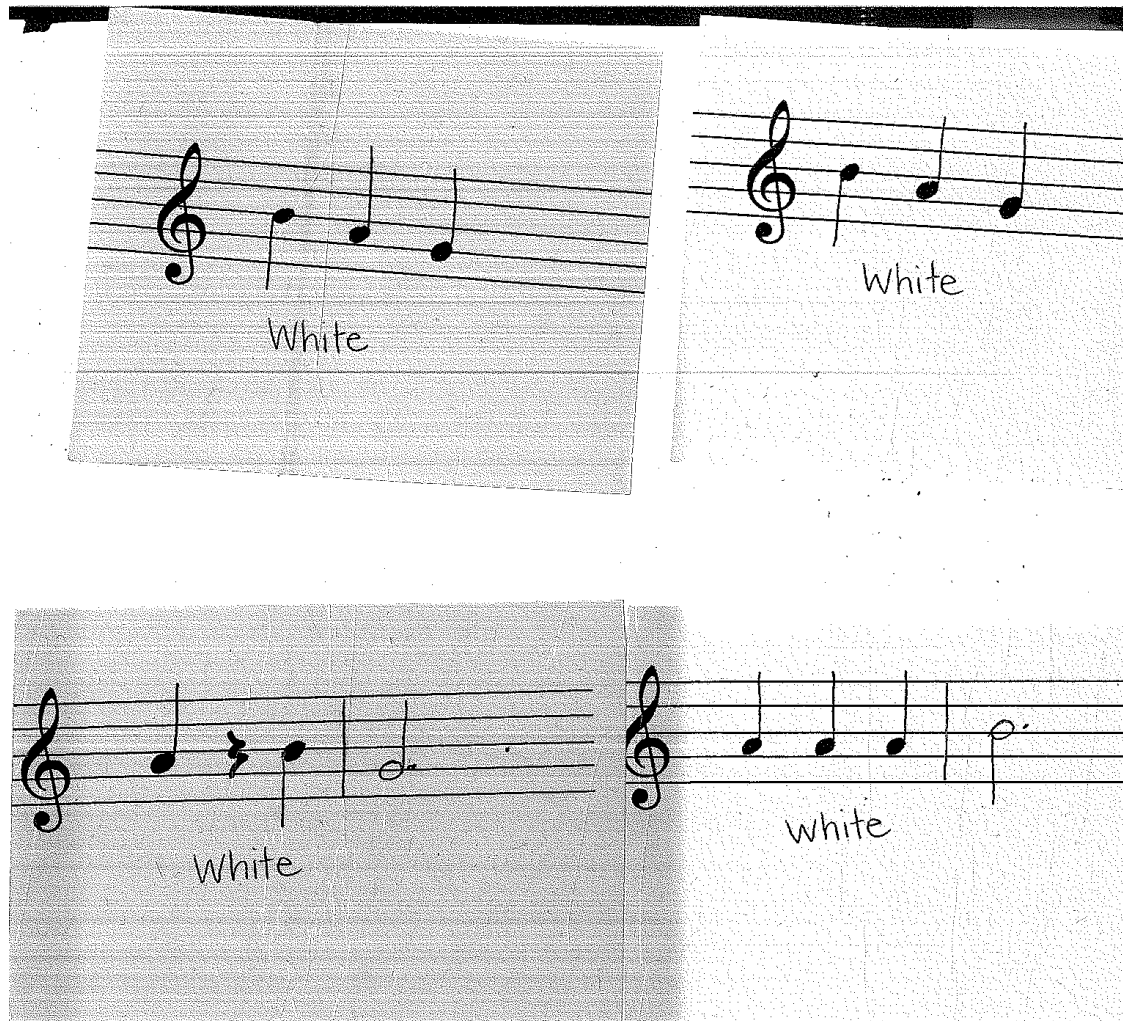


Figure E6: Flashcards with one measure of the yellow belt, “All Aboard!” (Almeida, 2003) written on each card.

These cards were used on instructional day 5.

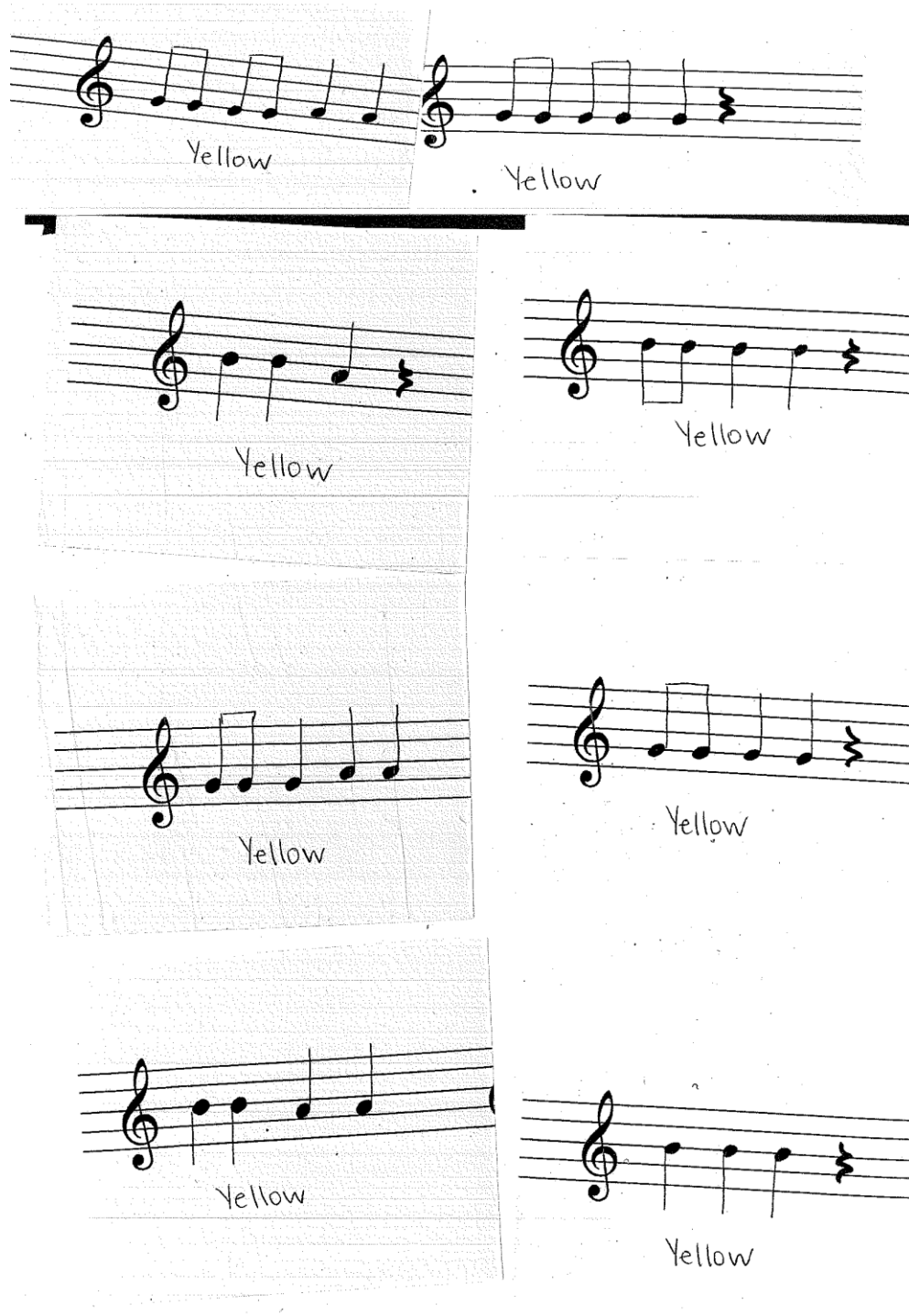
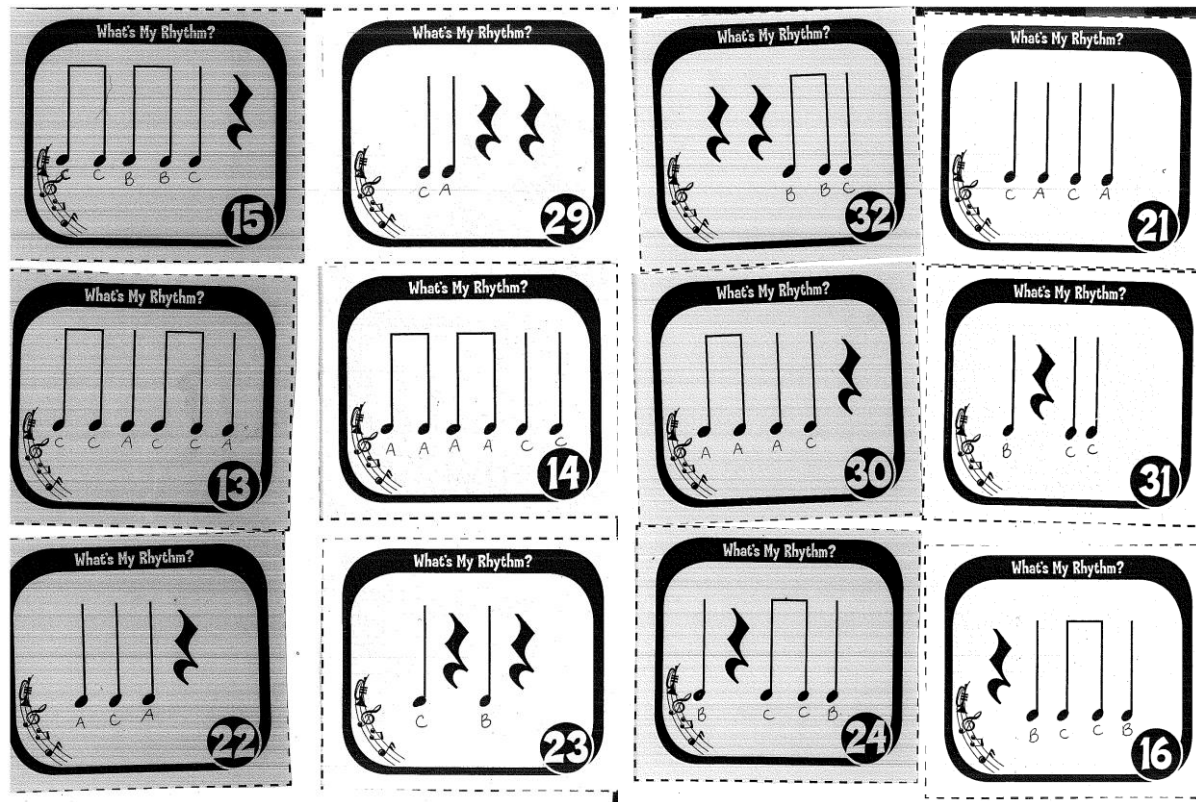


Figure E7: Rhythm cards using the pitches B and C.

These cards were used on instructional day 5..



(Katz & Brown, 2011)

Figure E8: Flashcards with two measures of the red belt, “Humpty Dumpty” (Almeida, 2003) written on each card.

These cards were used on instructional days 5 and 6.

